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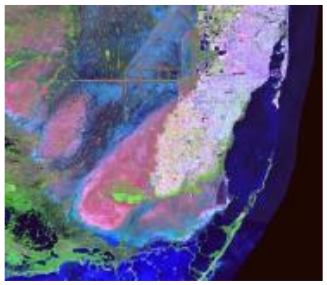
October 10, 2013

Final Independent External Peer Review Report Central Everglades Planning Project Draft Project Implementation Report and Environmental Impact Statement



Prepared by
Battelle Memorial Institute

Prepared for
Department of the Army
U.S. Army Corps of Engineers
Ecosystem Restoration Planning Center of Expertise
Mississippi Valley Division

Contract No. W912HQ-10-D-0002
Task Order: 0047

Final Independent External Peer Review Report
Central Everglades Planning Project Draft Project Implementation Report and Environmental Impact Statement

by

Battelle
505 King Avenue
Columbus, OH 43201

for

Department of the Army
U.S. Army Corps of Engineers
Ecosystem Restoration Planning Center of Expertise
for the Mississippi Valley Division

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Final Independent External Peer Review Report for the

Central Everglades Planning Project
Draft Project Implementation Report and Environmental Impact Statement

EXECUTIVE SUMMARY

Project Background and Purpose

The Central and Southern Florida (C&SF) project, authorized by Congress in 1948, expanded the existing network of canals, levees, water storage areas, and water control structures in south Florida. Project objectives include flood control, regional water supply, prevention of saltwater intrusion, water supply to Everglades National Park (ENP), preservation of fish and wildlife, recreation, and navigation. While fulfilling these objectives, the project has had unintended adverse effects on the natural environment by disrupting the pre-existing hydrologic regime of the Everglades and south Florida ecosystem. As a result, in 1996, the U.S. Army Corps of Engineers (USACE), in conjunction with the South Florida Water Management District (SFWMD), was directed to develop a comprehensive plan to restore, preserve, and protect the south Florida ecosystem while providing for other water-related needs of the region such as water quality and flood protection.

The recommended plan, identified as the Comprehensive Everglades Restoration Plan (CERP), was approved to provide a framework for the restoration of the natural system under Section 601 of the Water Resources Development Act (WRDA) of 2000. The plan, as documented in the Comprehensive Review Study (Yellow Book), consists of 68 different components that work together to restore, preserve, and protect the south Florida ecosystem while providing for other water-related needs of the region.

The next step for implementation of CERP is to redirect a portion of water that is currently discharged to the east and west coast estuaries from Lake Okeechobee and restore water flow to the south. The goal is to restore natural habitat conditions and water flow in the central Everglades and reconnect the ecosystem from Lake Okeechobee to ENP and Florida Bay. The Central Everglades Planning Project (CEPP) focuses on developing the next phase, or third generation, of CERP projects for the central Everglades region. It is being conducted as a national pilot project in USACE's streamlined planning process.

The CEPP will develop the initial increment of the project features that provide for (1) storage, treatment, and conveyance south of Lake Okeechobee, (2) decompartmentalization by removal of canals and levees within Water Conservation Area 3 (WCA 3), and (3) seepage management to retain water within the natural system. The study area for the CEPP encompasses a portion of the greater Everglades system that includes Lake Okeechobee, the Northern Estuaries (St. Lucie River and Indian River Lagoon, and the Caloosahatchee River and Estuary), the Everglades Agricultural Area, the Water Conservation Areas, ENP, Southern Estuaries (Florida Bay and Biscayne Bay), and the Lower East Coast Area (also referred to as the Atlantic Coastal Ridge).

The purpose of the CEPP is to restore the habitat in the Everglades ecosystem and Florida Bay by improving the quantity, quality, timing, and distribution of water flows to the central Everglades (WCA 3 and ENP).

Independent External Peer Review Process

USACE is conducting an Independent External Peer Review (IEPR) of the CEPP Draft Integrated Project Implementation Report and Environmental Impact Statement (DPIR/EIS) (hereinafter CEPP IEPR). As a 501(c)(3) non-profit science and technology organization, Battelle is independent, is free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization (OEO) per guidance described in USACE (2012). Battelle has experience in establishing and administering peer review panels for USACE and was engaged to coordinate the IEPR of the CEPP DPIR/EIS. Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analyses. The IEPR was external to the agency and conducted following USACE and Office of Management and Budget (OMB) guidance described in USACE (2012) and OMB (2004). This final report describes the IEPR process, describes the panel members and their selection, and summarizes the Final Panel Comments of the IEPR Panel (the Panel).

Based on the technical content of the CEPP review documents and the overall scope of the project, Battelle identified candidates for the Panel in the following key technical areas: economics, Civil Works planning, environmental and ecological evaluation, hydraulic engineering, and geotechnical engineering. Four panel members were selected for the IEPR. USACE was given the list of candidate panel members, but Battelle made the final selection of the Panel[1].

The Panel received an electronic version of the 3,295 page CEPP DPIR/EIS documents, along with a charge that solicited comments on specific sections of the documents to be reviewed. USACE prepared the charge questions following guidance provided in USACE (2012) and OMB (2004), which were included in the draft and final Work Plans.

The USACE Project Delivery Team (PDT) briefed the Panel and Battelle during a kick-off meeting held via teleconference prior to the start of the review to provide the Panel an opportunity to ask questions of USACE and clarify uncertainties. Other than Battelle-facilitated teleconferences, there was no direct communication between the Panel and USACE during the peer review process. The Panel produced individual comments in response to the charge questions.

IEPR panel members reviewed the CEPP DPIR/EIS documents individually. The panel members then met via teleconference with Battelle to review key technical comments, discuss charge questions for which there were conflicting responses, and reach agreement on the Final Panel Comments to be provided to USACE. Each Final Panel Comment was documented using a four-part format consisting of: (1) a comment statement; (2) the basis for the comment; (3) the

[1] Battelle identified a candidate who served in a combined role in the disciplines of economics and Civil Works planning for this IEPR.

significance of the comment (high, medium, or low); and (4) recommendations on how to resolve the comment. Overall, eight Final Panel Comments were identified and documented. Of these, two were identified as having high significance, four had medium significance, and two had low significance.

Results of the Independent External Peer Review

The panel members agreed among one another on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the CEPP DPIR/EIS review documents. The Panel also agreed that the CEPP DPIR/EIS and supporting appendices and annexes are comprehensive, detailed, and well written, and the CEPP represents a high-quality effort that is clearly the result of a long and detailed study.

Table ES-1 lists the Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Appendix A of this report. The following summarizes the Panel's findings.

Civil Works Planning/Economics – The Panel found that the CEPP DPIR/EIS and appendices adhered closely to USACE Civil Works planning policy and closely followed the six-step planning process. The problems and opportunities were clearly stated; the without-project condition was concisely described; and the range of alternatives considered was reasonably broad and thorough. The Panel is confident that the Civil Works planning and economic analyses identified the most cost-effective National Ecosystem Restoration (NER) plan.

While the Panel understood that the principal planning objective was contribution to the NER account, the primary economics and Civil Works planning concern is the fact that potential impacts to navigation on the Okeechobee Intercoastal Waterway were not discussed or addressed. The waterway is an economically, politically, and strategically important system that connects the eastern and western coasts of Florida and saves shippers and boaters millions of dollars annually. The CEPP DPIR/EIS and appendices contained no discussion regarding the waterway system and do not address potential impacts to commercial and recreational navigation as a result of the Tentatively Selected Plan (TSP). This concern can be addressed by presenting the impacts to navigation and the OIWW's congressionally authorized project purpose, as well as the results from quantifying potential losses or gains in National Economic Development (NED) and Regional Economic Development (RED) benefits or costs associated with implementation of the TSP, in the CEPP DPIR/EIS.

Environmental and Ecological Evaluation – The TSP is derived from a detailed analysis of an expansive database; the detailed information of the effects of the alternatives provides well-grounded support for selecting the TSP. Furthermore, because the CEPP adaptive management plan is based on the extensive existing body of scientific knowledge, it provides a structured approach to addressing the uncertainties of a project of this magnitude.

The primary environmental and ecological concern is that the TSP will result in adverse impacts to some of the Seminole Tribe's cultural resources. This could result in stoppages or delays in

implementation of some CEPP projects if the outstanding issues are not resolved to the mutual satisfaction of USACE and the Tribe. In addition, the Tribe's long-standing concerns with the hydrology and inadequate water supply for the environment and western basins appear to be unresolved. The issue of adverse impacts to cultural resources can be addressed by clarifying that all concerns have been resolved and that the resulting solution is not in conflict with the National Historic Preservation Act of 1966. The issue of hydrology and water supply requires clarification of the relationship of the western basins to the CEPP as these areas may be outside of the scope of the CEPP. If the western basins should be addressed by the CEPP, then additional language will need to be added to the CEPP DPIR/EIS.

Hydraulic Engineering – The hydrologic and hydraulic (H&H) modeling effort included in the CEPP DPIR/EIS was a complex and monumental undertaking. The Panel recognizes the tremendous effort made to quantify the complex and integrated H&H processes of the Everglades. The H&H analyses included in the CEPP DPIR/EIS follow USACE standards and employ reasonable and appropriate numerical models. These models will be used along with an adaptive management strategy to aid in the restoration of the domain with an estimated cost of $1.7 billion. The Panel believes that model uncertainty, especially as it relates to proposed design alternatives, and the propagation of model parameter uncertainty and its effect on proposed design criteria, should be documented. With the success of the restoration efforts resting squarely on the shoulders of the H&H analysis, the ultimate success of the restoration efforts in improving the water quality, ecology, recreation, and water supply would benefit from being reported in a probabilistic fashion.

Geotechnical Engineering – The overall geotechnical engineering issues associated with the TSP as presented in the CEPP DPIR/EIS are comprehensive and technically well supported. Geotechnical issues associated with underseepage of levees to the degree that excessive seepage does not occur yet ample water supply is provided inside the levees has been adequately addressed and is well-supported by appropriate technical analyses and evaluations. Geotechnical engineering concerns associated with potential overtopping of levees and other flood damage associated with rainfall events greater than the 100-year return frequency design storm are considered to be stop-log issues that may need further analyses in the next phase of CEPP. These analyses may include summarizing equivalent rainfall distributions for various occurrence probability percentages of the watershed; estimating maximum flood level elevations of Lake Okeechobee and critical components of the TSP; and estimating variations of percentages of modeled outflows.

Table ES-1. Overview of Eight Final Panel Comments Identified by the CEPP IEPR Panel

No.	Final Panel Comment
Significance – High	
1	Impacts to navigation on the Okeechobee Intercoastal Waterway (OIWW) as a result of the Tentatively Selected Plan (TSP) have not been addressed.
2	Unresolved issues between the U.S. Army Corps of Engineers (USACE) and Tribes related to possible impacts to cultural resources (including human remains/burial sites) within the project area could affect project implementation.

Table ES-1. Overview of Eight Final Panel Comments Identified by the CEPP IEPR Panel (continued)

No.	Final Panel Comment
	Significance – Medium
3	The Seminole Tribe's concern with what they consider an inadequate water supply for the environment (western basins) has not been addressed.
4	The process for screening management measures does not detail benefits to the Everglades system versus estimated costs.
5	Due to uncertainty related to the hydrologic and hydraulic (H&H) model parameters, model performance and predictive uncertainty could not be assessed.
6	Impacts that severe rainfall events above the 100-year return frequency design storm will have on components of the selected project alternative have not been addressed.
	Significance – Low
7	A monitoring network/plan to measure the Central Everglades Planning Project (CEPP) performance has not been included in the adaptive management strategy.
8	A clear discussion of the rationale for selecting the Unit Day Value (UDV) method to analyze recreation value rather than a site-specific model is not presented.

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LIST OF ACRONYMS

ATR	Agency Technical Review
C&SF	Central and Southern Florida
CEPP	Central Everglades Planning Project
CERP	Comprehensive Everglades Restoration Plan
COI	Conflict of Interest
CVS	Contingent Value Survey
DPIR/EIS	Draft Integrated Project Implementation Report/Environmental Impact Statement
DMSTA	Dynamic Model for Stormwater Treatment Areas
DrChecks	Design Review and Checking System
EA	Environmental Assessment
EC	Engineer Circular
ENP	Everglades National Park
ERDC	Engineer Research and Development Center
FDEP	Florida Department of Environmental Protection
H&H	Hydrologic and Hydraulic
HEC-FDA	Hydrologic Engineering Center-Flood Damage Reduction Analysis
HEC-RAS	Hydrologic Engineering Center-River Analysis System
IEPR	Independent External Peer Review
LOOPS	Lake Okeechobee Operations Screening
NEPA	National Environmental Policy Act
NER	National Ecosystem Restoration
NMFS	National Marine Fisheries Service
OEO	Outside Eligible Organization
OIWW	Okeechobee Intercoastal Waterway
OMB	Office of Management and Budget
PDT	Project Delivery Team
RESOPS	REeservoir Sizing and Operations Screening
RSM	Regional Simulation Model
RSMBN	Regional Simulation Model Basins
RSMGL	Regional Simulation Model Glades Lower East Coast

SFWMD	South Florida Water Management District
SFWMM	South Florida Water Management Model
TCM	Travel Cost Method
TSP	Tentatively Selected Plan
UDV	Unit Day Value
USACE	United States Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WCA	Water Conservation Area
WRDA	Water Resources Development Act

1. INTRODUCTION

The Central and Southern Florida (C&SF) project, authorized by Congress in 1948, expanded the existing network of canals, levees, water storage areas, and water control structures in south Florida. Project objectives include flood control, regional water supply, prevention of saltwater intrusion, water supply to Everglades National Park (ENP), preservation of fish and wildlife, recreation, and navigation. While fulfilling these objectives, the project has had unintended adverse effects on the natural environment by disrupting the pre-existing hydrologic regime of the Everglades and south Florida ecosystem. As a result, in 1996, the U.S. Army Corps of Engineers (USACE), in conjunction with the South Florida Water Management District (SFWMD), was directed to develop a comprehensive plan to restore, preserve, and protect the south Florida ecosystem while providing for other water-related needs of the region such as water quality and flood protection.

The recommended plan, identified as the Comprehensive Everglades Restoration Plan (CERP), was approved to provide a framework for the restoration of the natural system under Section 601 of the Water Resources Development Act (WRDA) of 2000. The plan, as documented in the Comprehensive Review Study (Yellow Book), consists of 68 different components that work together to restore, preserve, and protect the south Florida ecosystem while providing for other water-related needs of the region.

The next step for implementation of CERP is to redirect a portion of water that is currently discharged to the east and west coast estuaries from Lake Okeechobee and restore water flow to the south. The goal is to restore natural habitat conditions and water flow in the central Everglades and reconnect the ecosystem from Lake Okeechobee to ENP and Florida Bay. The Central Everglades Planning Project (CEPP) focuses on developing the next phase, or third generation, of CERP projects for the central Everglades region. It is being conducted as a national pilot project in USACE's streamlined planning process.

The CEPP will develop the initial increment of the project features that provide for (1) storage, treatment, and conveyance south of Lake Okeechobee, (2) decompartmentalization by removal of canals and levees within Water Conservation Area 3 (WCA 3), and (3) seepage management to retain water within the natural system. The study area for the CEPP encompasses a portion of the greater Everglades system that includes Lake Okeechobee, the Northern Estuaries (St. Lucie River and Indian River Lagoon, and the Caloosahatchee River and Estuary), the Everglades Agricultural Area, the Water Conservation Areas, ENP, Southern Estuaries (Florida Bay and Biscayne Bay), and the Lower East Coast Area (also referred to as the Atlantic Coastal Ridge).

The purpose of the CEPP is to restore the habitat in the Everglades ecosystem and Florida Bay by improving the quantity, quality, timing and distribution of water flows to the central Everglades (WCA 3 and ENP).

The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the CEPP Draft Project Implementation Report and Environmental Impact Statement (DPIR/EIS) (hereinafter CEPP IEPR) in accordance with procedures described in the

Department of the Army, USACE Engineer Circular (EC) *Civil Works Review* (EC 1165-2-214) (USACE, 2012) and Office of Management and Budget (OMB) bulletin *Final Information Quality Bulletin for Peer Review* (OMB, 2004). Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analyses.

This final report details the IEPR process, describes the IEPR panel members and their selection, and summarizes the Final Panel Comments of the IEPR Panel on the existing environmental, economic, and engineering analyses contained in the CEPP DPIR /EIS. The full text of the Final Panel Comments is presented in Appendix A.

2. PURPOSE OF THE IEPR

To ensure that USACE documents are supported by the best scientific and technical information, USACE has implemented a peer review process that uses IEPR to complement the Agency Technical Review (ATR), as described in USACE (2012).

In general, the purpose of peer review is to strengthen the quality and credibility of the USACE decision documents in support of its Civil Works program. IEPR provides an independent assessment of the economic, engineering, and environmental analysis of the project study. In particular, the IEPR addresses the technical soundness of the project study's assumptions, methods, analyses, and calculations and identifies the need for additional data or analyses to make a good decision regarding implementation of alternatives and recommendations.

In this case, the IEPR of the CEPP DPIR/EIS was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by EC No. 1165-2-214). Battelle, a 501(c)(3) organization under the U.S. Internal Revenue Code, has experience conducting IEPRs for USACE.

3. METHODS

This section describes the method followed in selecting the members for the IEPR Panel (the Panel) and in planning and conducting the IEPR. The IEPR was conducted following procedures described by USACE (2012) and in accordance with OMB (2004) guidance. Supplemental guidance on evaluation for conflicts of interest (COIs) was obtained from the *Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports* (The National Academies, 2003).

3.1 Planning and Schedule

At the beginning of the Period of Performance, Battelle held a kick-off meeting with USACE to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope (e.g., clarify expertise areas needed for panel members). Any revisions to the schedule were submitted as part of the final Work Plan. In addition, 42 charge questions were provided by USACE and included in the draft and final Work Plans. The final charge also included general guidance for the Panel on the conduct of the peer review (provided in Appendix B of this final report).

Table 1 presents the schedule followed in executing the IEPR. Due dates for milestones and deliverables are based on the award/effective date of August 7, 2013. The review documents were provided by USACE on August 22, 2013. Note that the work items listed in Task 6 and activities associated with the participation in the Civil Works Review Board meeting occur after the submission of this report. Battelle will enter the eight Final Panel Comments developed by the Panel into USACE's Design Review and Checking System (DrChecks), a Web-based software system for documenting and sharing comments on reports and design documents, so that USACE can review and respond to them. USACE will provide responses (Evaluator Responses) to the Final Panel Comments, and the Panel will respond (BackCheck Responses) to the Evaluator Responses. All USACE and Panel responses will be documented by Battelle. Battelle will provide USACE and the Panel a pdf printout of all DrChecks entries, through comment closeout, as a final deliverable and record of the IEPR results.

Table 1. CEPP IEPR Schedule

Task	Action	Due Date
1	Award/Effective Date	8/7/2013
	Review documents available	8/22/2013
	Battelle submits draft Work Plan[a]	8/22/2013
	USACE provides comments on draft Work Plan	8/27/2013
	Battelle submits final Work Plan[a]	8/29/2013
2	Battelle requests input from USACE on the COI questionnaire	8/8/2013
	USACE provides comments on COI questionnaire	8/9/2013
	Battelle submits list of selected panel members[a]	8/16/2013
	USACE confirms the panel members have no COI	8/21/2013
	Battelle completes subcontracts for panel members	8/27/2013
3	Battelle convenes kick-off meeting with USACE	8/15/2013
	Battelle sends review documents to panel members	8/27/2013
	Battelle convenes kick-off meeting with panel members	8/28/2013
	Battelle convenes kick-off meeting with USACE and panel members	8/30/2013
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	9/6/2013
	Civil Works Review Board	2/18/2104
4	Panel members complete their individual reviews	9/11/2013
	Battelle provides panel members with talking points for Panel Review Teleconference	9/17/2013
	Battelle convenes Panel Review Teleconference	9/19/2013
	Battelle provides Final Panel Comment templates and instructions to panel members	9/20/2013
	Panel members provide draft Final Panel Comments to Battelle	9/25/2013

Table 1. CEPP IEPR Schedule (continued)

Task	Action	Due Date
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	9/25-10/4/2013
	Battelle finalizes Final Panel Comments	10/4/2013
5	Battelle provides Working Draft Panel Comments to USACE	10/8/2013
	Battelle provides Final IEPR Report to panel members for review	10/8/2013
	Panel members provide comments on Final IEPR Report	10/8/2013
	Battelle submits Final IEPR Report to USACE[a]	10/10/2013
6[b]	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	10/11/2013
	Battelle convenes teleconference with USACE to review the Post-Final Panel Comment Response Process	10/15/2013
6[b]	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process (if necessary)	10/15/2013
	USACE provides draft Project Delivery Team (PDT) Evaluator Responses to Battelle	10/18/2013
	Battelle provides the panel members the draft PDT Evaluator Responses	10/21/2013
	Panel members provide Battelle with draft BackCheck Responses	10/24/2013
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	10/25/2013
	Battelle convenes Comment-Response Teleconference with panel members and USACE	10/25/2013
	USACE inputs final PDT Evaluator Responses to DrChecks	10/29/2013
	Battelle provides final PDT Evaluator Responses to panel members	10/30/2013
	Panel members provide Battelle with final BackCheck Responses	11/1/2013
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	11/4/2013
	Battelle submits pdf printout of DrChecks project file[a]	**11/4/2013**
	Contract End/Delivery Date	8/6/2014

[a] *Deliverable.*
[b] *Task 6 occurs after the submission of this report*

3.2 Identification and Selection of IEPR Panel Members

The candidates for the Panel were evaluated based on their technical expertise in the following key areas: economics, Civil Works planning, environmental and ecological evaluation, hydraulic engineering, and geotechnical engineering. These areas correspond to the technical content of the CEPP IEPR and overall scope of the CEPP DPIR/EIS.

To identify candidate panel members, Battelle reviewed the credentials of the experts in Battelle's Peer Reviewer Database, sought recommendations from colleagues, contacted former panel members, and conducted targeted Internet searches. Battelle evaluated these candidate

panel members in terms of their technical expertise and potential COIs. Of these candidates, Battelle chose the most qualified individuals, confirmed their interest and availability, and ultimately selected four experts for the final Panel.

The four selected reviewers constituted the final Panel. One of the panel members for this IEPR served in a combined role in the disciplines of economics and Civil Works planning. The remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed COIs, or lack of the precise technical expertise required.

The candidates were screened for the following potential exclusion criteria or COIs.[1] These COI questions were intended to serve as a means of disclosure and to better characterize a candidate's employment history and background. Providing a positive response to a COI screening question did not automatically preclude a candidate from serving on the Panel. For example, participation in previous USACE technical peer review committees and other technical review panel experience was included as a COI screening question. A positive response to this question could be considered a benefit.

- Previous and/or current involvement by you or your firm[2] in the CEPP DPIR/EIS.
- Previous and/or current involvement by you or your firm[2] in CERP projects for the central Everglades region.
- Previous and/or current involvement by you or your firm[2] in the conceptual or actual design, construction, or operation and maintenance of any projects in the CEPP or CERP-related projects.
- Current employment by USACE.
- Previous and/or current involvement with paid or unpaid expert testimony related to C&SF, or specifically, the CEPP DPIR/EIS.
- Previous and/or current employment or affiliation with members of the cooperating agencies, local sponsors, or those agencies directly involved in the development of the CEPP DPIR/EIS: SFWMD, ENP, Florida Department of Environmental Protection (FDEP), U.S. Fish and Wildlife Service (USFWS), United States Geological Survey, Florida Department of Agricultural and Consumer Services, Florida Wildlife Conservation Commission, or members of RECOVER (for pay or pro bono).
- Past, current or future interests or involvements (financial or otherwise) by you, your spouse, or children related to Southern Florida, including the South Florida ecosystem.
- Current personal involvement with other USACE projects, including whether involvement was to author any manuals or guidance documents for USACE. If yes,

[1] Battelle evaluated whether scientists in universities and consulting firms that are receiving USACE-funding have sufficient independence from USACE to be appropriate peer reviewers. See OMB (2004, p. 18), "….when a scientist is awarded a government research grant through an investigator-initiated, peer-reviewed competition, there generally should be no question as to that scientist's ability to offer independent scientific advice to the agency on other projects. This contrasts, for example, to a situation in which a scientist has a consulting or contractual arrangement with the agency or office sponsoring a peer review. Likewise, when the agency and a researcher work together (e.g., through a cooperative agreement) to design or implement a study, there is less independence from the agency. Furthermore, if a scientist has repeatedly served as a reviewer for the same agency, some may question whether that scientist is sufficiently independent from the agency to be employed as a peer reviewer on agency-sponsored projects."

[2] Includes any joint ventures in which a panel member's firm is involved and if the firm serves as a prime or as a subcontractor to a prime.

provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, ERDC], etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the Jacksonville District.

- Previous or current involvement with the development or testing of models that will be used for or in support of the CEPP DPIR/EIS. Models used as part of this study include: Hydrologic Engineering Center-River Analysis System (HEC-RAS), REservoir Sizing and Operations Screening (RESOPS), the Regional Simulation Model Basins (RSMBN), the Regional Simulation Model Glades Lower East Coast (RSMGL), the South Florida Water Management Model (SFWMM), the Dynamic Model for Stormwater Treatment Areas (DMSTA), the Lake Okeechobee Operations Screening (LOOPS), or the C-43 Spreadsheet Model (Starnes and Marlowe, 2007).
- Current firm[2] involvement with other USACE projects, specifically those projects/contracts that are with the Jacksonville District. If yes, provide title/description, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please also clearly delineate the percentage of work you personally are currently conducting for the Jacksonville District. Please explain.
- Any previous employment by the USACE as a direct employee, notably if employment was with the Jacksonville District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Any previous employment by the USACE as a contractor (either as an individual or through your firm[2]) within the last 10 years, notably if those projects/contracts are with the Jacksonville District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Previous experience conducting technical peer reviews. If yes, please highlight and discuss any technical reviews concerning previous Everglades restoration projects or flood risk management projects, and include the client/agency and duration of review (approximate dates).
- Pending, current, or future financial interests in CERP-related projects or, specifically, CEPP DPIR/EIS-related contracts/awards from USACE.
- A significant portion (i.e., greater than 50%) of personal or firm[2] revenues within the last 3 years came from USACE contracts.
- A significant portion (i.e., greater than 50%) of personal or firm[2] revenues within the last 3 years from contracts with the local sponsor (SFWMD).
- Any publicly documented statement (including, for example, advocating for or discouraging against) related to any C&SF projects, and specifically the CEPP DPIR/EIS.
- Participation in relevant prior federal studies relevant to this project.
- Previous and/or current participation in prior non-federal studies relevant to this project.
- Is there any past, present, or future activity, relationship, or interest (financial or otherwise) that could make it appear that you would be unable to provide unbiased services on this project? If so, please describe.

In selecting the final members of the Panel, Battelle chose experts who best fit the expertise areas and had no COIs. The four final reviewers were either affiliated with consulting

companies or were independent engineering consultants. Battelle established subcontracts with the panel members when they indicated their willingness to participate and confirmed the absence of COIs through a signed COI form. USACE was given the list of candidate panel members, but Battelle made the final selection of the Panel. Section 4 of this report provides names and biographical information on the panel members.

3.3 Conduct of the IEPR

Prior to beginning their review and within 1 day of their subcontracts being finalized, all members of the Panel attended a kick-off meeting via teleconference planned and facilitated by Battelle in order to review the IEPR process, the schedule, communication procedures, and other pertinent information for the Panel. Battelle planned and facilitated a second kick-off meeting via teleconference during which USACE presented project details to the Panel. Before the meetings, the IEPR Panel received an electronic version of the final charge as well as the CEPP review documents and reference materials listed below. The documents and files in bold font were provided for review; the other documents were provided for reference or supplemental information only.

- **CEPP Draft Project Implementation Report/Environmental Impact Statement (287 pages)**
- **Risk Register (5 pages)**
- **Appendix A – Engineering (207 pages)**
- **Appendix A – Engineering Annexes A-D**
    - **H&H Design (54 pages)**
    - **Hydrologic Modeling (428 pages)**
    - **Value Engineering (84 pages)**
    - **Civil Project Points (6 pages)**
    - **Civil Plates (20 pages)**
    - **Mechanical Plates (5 pages)**
- **Appendix B – Cost Engineering (277 pages)**
- **Appendix C – Environmental and Cultural Resources Information (966 pages)**
- **Appendix D – Real Estate (52 pages)**
- **Appendix E – Plan Formulation (98 pages)**
- **Appendix F – Recreation Resources (23 pages)**
- **Appendix G – Benefits Model (124 pages)**
- **Annex D – Adaptive Management and Monitoring Plans (223 pages)**
- **Annex E – RECOVER System-wide Evaluation (111 pages)**
- **Annex H – Hazardous, Toxic, and Radioactive Waste (216 pages)**
- **Annex I – Sea Level Rise Assessment (37 pages)**
- Appendix A - Engineering Annexes G1 - G4 (1894 pages)
- Annex A - Fish & Wildlife Coordination/ESA Compliance (614 pages)
- Annex B - Analysis Required by WRDA 2000 & State Law (78 pages)

- Annex C - Draft Project Operating Manual (51 pages)
- Annex F - Water Quality Assessment (40 pages)
- Annex G - Invasive and Nuisance Species Management Plan (62 pages)
- USACE guidance Civil Works Review, (EC 1165-2-214) dated 15 December 2012
- Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* released December 16, 2004.

About half-way through the review of the CEPP review documents, Battelle submitted four panel member questions to USACE so that USACE could answer any questions the Panel had concerning either the review documents or the project. All questions were addressed by USACE on September 6, 2013.

3.4 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a charge question response table provided by Battelle. At the end of the review period, the Panel produced individual comments in response to the charge questions/discussion points. Battelle reviewed the comments to identify overall recurring themes, areas of potential conflict, and other overall impressions. As a result of the review, Battelle summarized the individual comments into a preliminary list of 13 overall comments and discussion points. Each panel member's individual comments were shared with the full Panel in a merged individual comments table.

3.5 IEPR Panel Teleconference

Battelle facilitated a 4-hour teleconference with the Panel so that the panel members could exchange technical information. The main goal of the teleconference was to identify which issues should be carried forward as Final Panel Comments in the Final IEPR Report and decide which panel member would serve as the lead author for the development of each Final Panel Comment. This information exchange ensured that the Final IEPR Report would accurately represent the Panel's assessment of the project, including any conflicting opinions. The Panel engaged in a thorough discussion of the overall positive and negative comments, added any missing issues of high-level importance to the findings, and merged any related individual comments. In addition, Battelle confirmed each Final Panel Comment's level of significance to the Panel.

The Panel also discussed responses to one specific charge question where there appeared to be disagreement among panel members. The conflicting comment was resolved based on the professional judgment of the Panel, and all sets of comments were determined not to be conflicting.

At the end of these discussions, the Panel identified 10 comments and discussion points that should be brought forward as Final Panel Comments.

3.6 Preparation of Final Panel Comments

Following the teleconference, Battelle prepared a summary memorandum for the Panel documenting each Final Panel Comment (organized by level of significance). The memorandum

provided the following detailed guidance on the approach and format to be used to develop the Final Panel Comments for the CEPP IEPR:

- Lead Responsibility: For each Final Panel Comment, one Panel member was identified as the lead author responsible for coordinating the development of the Final Panel Comment and submitting it to Battelle. Battelle modified lead assignments at the direction of the Panel. To assist each lead in the development of the Final Panel Comments, Battelle distributed the merged individual comments table, a summary detailing each draft final comment statement, an example Final Panel Comment following the four-part structure described below, and templates for the preparation of each Final Panel Comment.
- Directive to the Lead: Each lead was encouraged to communicate directly with the other panel members as needed and to contribute to a particular Final Panel Comment. If a significant comment was identified that was not covered by one of the original Final Panel Comments, the appropriate lead was instructed to draft a new Final Panel Comment.
- Format for Final Panel Comments: Each Final Panel Comment was presented as part of a four-part structure:
  1. Comment Statement (succinct summary statement of concern)
  2. Basis for Comment (details regarding the concern)
  3. Significance (high, medium, low; see description below)
  4. Recommendation(s) for Resolution (see description below).
- Criteria for Significance: The following were used as criteria for assigning a significance level to each Final Panel Comment:
  1. High: Describes a fundamental problem with the project that could affect the recommendation, success, or justification of the project. Comments rated as high indicate that the Panel analyzed or assessed the methods, models, and/or analyses and determined that there is a "showstopper" issue.
  2. Medium: Affects the completeness of the report in describing the project, but will not affect the recommendation or justification of the project. Comments rated as medium indicate that the Panel does not have sufficient information to analyze or assess the methods, models, or analyses.
  3. Low: Affects the understanding or accuracy of the project as described in the report, but will not affect the recommendation or justification of the project. Comments rated as low indicate that the Panel identified information (tables, figures, equations, discussions) that was mislabeled or incorrect or data or report sections that were not clearly described or presented.
- Guidance for Developing Recommendations: The recommendation section was to include specific actions that USACE should consider to resolve the Final Panel Comment (e.g., suggestions on how and where to incorporate data into the analysis, how and where to address insufficiencies, areas where additional documentation is needed).

Battelle reviewed and edited the Final Panel Comments for clarity, consistency with the comment statement, and adherence to guidance on the Panel's overall charge, which included ensuring that there were no comments regarding either the appropriateness of the selected alternative or USACE policy. During the Final Panel Comment development process, the Panel

determined that two of the Final Panel Comments could be either dropped or merged into other Final Panel Comments; therefore, the total Final Panel Comment count was reduced to eight. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The Final Panel Comments are presented in Appendix A of this report.

4. PANEL DESCRIPTION

Candidates for the Panel were identified using Battelle's Peer Reviewer Database, targeted Internet searches using key words (e.g., technical area, geographic region), searches of websites of universities or other compiled expert sites, and referrals. Battelle prepared a draft list of primary and backup candidate panel members (who were screened for availability, technical background, and COIs), and provided it to USACE for feedback. Battelle made the final selection of panel members.

An overview of the credentials of the final four members of the Panel and their qualifications in relation to the technical evaluation criteria is presented in Table 2. More detailed biographical information regarding each panel member and his area of technical expertise is presented in the text that follows the table.

Table 2. CEPP IEPR Panel: Technical Criteria and Areas of Expertise

Technical Criterion	Luckie	Thoemke	Tara	Marks
Economics/Civil Works Planning				
Minimum 10 years of demonstrated experience in public works planning with high public and interagency interests	X			
Minimum 10 years of experience directly related to water resource economic evaluation or review	X			
Familiar with USACE plan formulation process, procedures, and standards	X			
Familiar with economic evaluation techniques, including cost-effectiveness-incremental cost analyses	X			
Familiar with procedures associated with identifying the National Ecosystem Restoration (NER) plan	X			

Table 2. CEPP IEPR Panel: Technical Criteria and Areas of Expertise (continued)

Technical Criterion	Luckie	Thoemke	Tara	Marks
Familiar with evaluation of alternative plans for ecosystem restoration projects	X			
Experience should encompass projects with nearby project-impacted sensitive habitats	X			
M.S. degree or higher in economics	X[a]			
Environmental and Ecological Evaluation				
Minimum 10 years of experience directly related to water resource environmental evaluation or review and National Environmental Policy Act (NEPA) compliance		X		
Extensive experience working with wetlands and estuarine ecosystems		X		
Familiar with USACE calculation and application of environmental impacts and benefits		X		
Experience in the south Florida region		X		
M.S. degree or higher in an appropriate field of study		X		
Hydraulic Engineering				
Expert in hydrologic and hydraulic (H&H) modeling related to wetland restoration			X	
Minimum 10 years of experience in H&H engineering with extensive background in H&H theory and practice, knowledge of south Florida hydrology, and water management			X	
Familiar with the application of integrated surface water and groundwater models, including the capability to review typical data output from hydrologic models			X	
Experience with hydrologic modeling tools selected for project application, including:			X	
RESOPS			X	
LOOPS			X	
RSMBN			X	
SFWMM			X	

Table 2. CEPP IEPR Panel: Technical Criteria and Areas of Expertise (continued)

Technical Criterion	Luckie	Thoemke	Tara	Marks
RSMGL			X	
DMSTA			X	
HEC-RAS			X	
Active participant in related professional societies			X	
Registered professional engineer			X	
M.S. degree or higher in engineering			X	
Geotechnical Engineering				
Minimum 10 years' of experience directly related to geologic processes in coastal environments				X
Experience with geomorphic processes in wetlands and coastal ecosystems				X
Experience in the south Florida region				X
B.S. degree or higher in engineering				X

[a] *Waiver statement presented as part of Task 2 deliverable and approved by USACE*

David Luckie (Dual Role)

Role: Economics and Civil Works planning
Affiliation: Independent Consultant

Mr. Luckie is a senior economist with 25 years of experience as a project delivery team leader, planner, and water resource economist. He earned his B.S. in economics from the University of South Alabama in 1986 and is an expert in flood risk analysis, flood risk reduction, multipurpose project studies, and plan formulation. His experience directly related to water resource economic evaluation includes working with multidisicplinary teams on complex planning studies, including flood control, water supply, water quality, and ecosystem restoration. His experience also includes technical and policy review to ensure that planning studies comply with applicable guidance and current law. Mr. Luckie was a regional economist for the USACE Mobile District's Planning and Environmental Division from 1998 to 2006. In that capacity, he was involved in numerous high profile Civil Works projects, including the Alabama-Coosa Tallapoosa-Apalachicola Chattahoochee Flint Comprehensive EIS studies that covered water resource planning issues for two watersheds and three states (Alabama, Florida, and Georgia).

During his 17-year career with USACE, Mr. Luckie led or worked on numerous

multidisciplinary teams for complex federal water resource studies and was involved in a variety of high-profile public works projects. He provided the economic analyses and plan formulation services for studies such as the Village Creek Watershed Study (Birmingham, Alabama). This study included extensive use of USACE's Hydrologic Engineering Center-Flood Damage Reduction Analysis (HEC-FDA) software program; careful coordination with the study team's hydrologic and hydraulic (H&H) engineers; and flood risk reduction, recreation, and ecosystem restoration outputs. Mr. Luckie is very familiar with the USACE six-step planning process (USACE, 2000). He has prepared or reviewed numerous successful planning studies that rigorously followed USACE procedures and identified cost-effective solutions to water resource problems throughout the southeast and across the United States. Mr. Luckie is familiar with the USACE planning process, guidance, and economic evaluation techniques; he was an early implementer of the Nine Easy Steps Method of incremental cost analysis, the basis for modern USACE environmental and cost-effectiveness planning tools. He is familiar with the evaluation of alternative plans for ecosystem restoration projects and has used the procedures in EC 1105-2-404 (USACE, 2003) on a variety of projects, including the Big Escambia Creek in Alabama and Florida and the Dog River Pilot Project in Mobile Bay, Alabama. The Big Escambia Creek and Dog River Pilot projects had nearby project-impacted sensitive habitats, including estuarine wetlands, bottomland hardwoods, and productive aquatic habits in both coastal and inland environments.

Kris Thoemke, Ph.D.

Role: Environmental and ecological evaluation planning
Affiliation: Coastal Engineering Consultants, Inc.

Dr. Thoemke is a Senior Associate Scientist for Coastal Engineering Consultants Inc. He received his Ph.D. in biology from the University of South Florida in 1979 and is a Certified Environmental Professional. He has 34 years of experience as a professional ecologist in south Florida. He has been a researcher and land manager for the State of Florida, a private ecological consultant, an environmental and outdoor communicator, and an Everglades project manager for a non-profit organization. He has also taught graduate level environmental management and permitting and compliance courses.

For the past 8 years, Dr. Thoemke has conducted environmental consulting work related to water resource environmental permitting and National Environmental Policy Act (NEPA) compliance documentation, as well as teaching graduate courses in environmental management, permitting, and NEPA compliance. His experience with wetlands and estuarine ecosystems includes his Ph.D. work on estuarine invertebrates; 11 years as manager of Rookery Bay National Estuarine Research Reserve in Naples, Florida; 4 years as a wetlands ecologist conducting Everglades restoration work; and 8 years as a wetlands and estuarine consultant.

Dr. Thoemke's experience with USACE calculation and application of environmental impacts and benefits includes 8 years of experience with the USACE environmental permitting process; mitigation and impact assessments; review of USACE EIS and environmental assessment (EA) documents, including impact and benefit analyses; and previous IEPR experience. He was a member of an integrated team of scientists and engineers that prepared the EIS for the Terrebonne Basin Barrier Island Shoreline Restoration Project, Louisiana, which included

Endangered Species Act, essential fish habitat, and NEPA requirements.

Dr. Thoemke has extensive experience in the south Florida region, having spent his entire 34-year career living and working in the area. He has decades of field experience throughout all the upland and wetland habitats in south and central Florida and estuarine and marine habitats along the Gulf of Mexico. He has worked on a variety of projects involving environmental protection and habitat restoration as well as growth and development issues in south Florida. He prepared an EA of the Port Everglades Ocean Dredged Material Disposal Site for the USACE Jacksonville District, which included NEPA compliance and consultations with USFWS and the National Marine Fisheries Service (NMFS). He has completed Section 7 assessments for listed species under NMFS jurisdiction for projects in several south Florida locations and coordinated with USFWS to prepare an updated Biological Opinion for swimming sea turtles and shorebirds for several coastal projects in south Florida. Dr. Thoemke is a member of the National Association of Environmental Professionals and the Academy of Board Certified Environmental Professionals.

Patrick Tara, P.E.

Role: Hydraulic engineering
Affiliation: INTERA, Inc.

Mr. Tara is a senior water resources engineer with INTERA, Inc., and is a licensed engineer and professional hydrologist in Florida. He received his M.S. in civil engineering from the University of South Florida in 1991. Mr. Tara has over 23 years of experience in water resource engineering, focused on surface water hydrology, groundwater, hydraulics, and integrated surface water/groundwater hydrologic systems. He has developed H&H models for environmental restoration, water supply, and minimum flows and levels. His project experience is focused in Florida; he has worked for all the water management districts in Florida as well as the FDEP.

Mr. Tara has experience with most of the hydrologic modeling tools selected for project application. His experience in H&H modeling projects includes the development and application of numerous model codes with a focus on shallow water table environments. His modeling studies have examined both surface and groundwater impacts. He has significant experience with integrated hydrologic models and was involved in the development and application of the FHM and Integrated Hydrologic Model (IHM fully integrated hydrologic models. He has reviewed the RSM code and applied the natural systems RSM model; he has also used the RSM code within a Monte Carlo-based uncertainty analysis to determine the uncertainty in model output based on the uncertainty of model parameters. He also has experience with RSM, ELM, MIKE SHE, and WASH models and has used them to perform Monte Carlo uncertainty analyses. Additionally, Mr. Tara has experience with SFWMM to define the boundary conditions for the ELM model and with DMSTA to evaluate the benefits of converting land adjacent to Lake Okeechobee into a stormwater treatment area. DMSTA was modified to support uncertainty analysis and used inside Crystal Ball to evaluate the model results given the incertainty in both the settling rate and the input concentration.

Mr. Tara has applied HEC-RAS to many riverine systems in Florida for minimum flows and

levels development, floodplain delineation, and scour analysis. He has utilized the model in both steady-state and dynamic modes. He has also utilized GEO-RAS to take advantage of the Geographic Information System data in the development of HEC-RAS models.

Mr. Tara has served as a peer reviewer for many hydrologic models in Florida, including those for litigations support; has participated in numerous conferences; and has presented his works in journals, at conferences, and on conference posters. He is a member of the national and state American Water Resources Association and a member of the American Institute of Hydrology.

B. Dan Marks, P.E., Ph.D.

Role: Geotechnical engineering
Affiliation: Marks Enterprises of NC, PLLC

Dr. Marks is the owner and manager of Marks Enterprises of NC, PLLC in Arden, North Carolina, and is a registered professional engineer in North Carolina, Georgia, and South Carolina. He earned his Ph.D. in civil engineering from Oklahoma State University in 1970 and has over 44 years of experience as a geotechnical and civil engineer. His areas of expertise include administration and management of geotechnical engineering projects; dam and water-retention structure analyses and design; earth-retaining structure analyses and design; landslide and slope stability analyses; remediation design; stabilization; erosion and sedimentation control; seepage analyses and groundwater flow evaluations; geosynthetics and geotextiles in drainage and reinforcement; and failure analyses and remediation consulting.

Dr. Marks has direct experience related to geologic processes in coastal environments. He has completed over a hundred projects at state ports on the Atlantic Seaboard from Maryland to Florida, including the Nuclear Submarine Station at Goose Creek, South Carolina, and the Norfolk Naval Shipyard Berth & Pier Stability Evaluation. Dr. Marks has extensive experience working with geomorphic processes in wetlands and coastal ecosystems. He has completed more than 200 dam projects that included wetland and coastal ecosystem permits for design and construction. Dr. Marks has experience in the south Florida region, most recently with a groundwater control system project for city block development in West Palm Beach, Florida, and a potential hurricane flood dewatering system. He is experienced with erosion control of protected side slopes and level crowns against storm-generated wave overtopping. He co-authored the *Technical Manual for Dam Owners: Impacts of Trees and Woody Vegetation on Earthen Dams* for the Federal Emergency Management Agency and the first *Erosion & Sedimentation Control Manual* used by the Federal Highway Administration. He has authored 20 publications, more than 15 reports, and over 75 presentations in the geotechnical field, including stabilization, remediation, and erosion control.

5. SUMMARY OF FINAL PANEL COMMENTS

The panel members agreed among one another on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the CEPP DPIR/EIS review documents. The Panel also agreed upon the quality of the CEPP DPIR/EIS during the documents review phase of the project. The CEPP DPIR/EIS and supporting appendices and annexes are comprehensive, detailed, and well

written, and the CEPP represents a high-quality effort that is clearly the result of a long and detailed study.

Table 3 lists the Final Panel Comments statements by level of significance. The full text of the Final Panel Comments is presented in Appendix A of this report. The following summarizes the Panel's findings.

Economics/Civil Works Planning – The Panel found that the CEPP DPIR/EIS and appendices adhered closely to USACE Civil Works planning policy and closely followed the six-step planning process. The problems and opportunities were clearly stated; the without-project condition was concisely described; and the range of alternatives considered was reasonably broad and thorough. The Panel is confident that the Civil Works planning and economic analyses identified the most cost effective National Ecosystem Restoration (NER) plan. While the Panel understood that the primary planning objective was contribution to the NER account, the fact that potential impacts to navigation on the Okeechobee Intercoastal Waterway were not discussed or addressed was an issue of concern. The waterway is an economically, politically, and strategically important system that connects the eastern and western coasts of Florida and saves shippers and boaters millions of dollars annually. The CEPP DPIR/EIS and appendices contained no discussion of navigation on the waterway or impacts to this project purpose.

Environmental and Ecological Evaluation – The Tentatively Selected Plan (TSP) is derived from a detailed analysis of an expansive database; the detailed information of the effects of the alternatives provides well-grounded support for selecting the TSP. Furthermore, because the CEPP adaptive management plan is based on the extensive existing body of scientific knowledge, it provides a structured approach to dealing with the uncertainties of a project of this magnitude.

The highest level of concern is that the TSP will result in adverse impacts to some of the Seminole Tribe's cultural resources. This could result in stoppages or delays in implementation of some CEPP projects if the outstanding issues are not resolved to the mutual satisfaction of USACE and the Tribe. In addition, the Tribe's long-standing concerns with the hydrology and inadequate water supply for the environment and western basins appear to be unresolved. The issue of adverse impacts to cultural resources can be addressed by clarifying that all concerns have been resolved and that the resulting solution is not in conflict with National Historic Preservation Act of 1966. The issue of hydrology and water supply requires clarification of the relationship of the western basins to the CEPP as these areas may be outside of the scope of the CEPP. If the western basins should be addressed by the CEPP, then additional language will need to be added to the CEPP DPIR/EIS.

Hydraulic Engineering – The hydrologic and hydraulic (H&H) modeling effort included in the CEPP DPIR/EIS was a complex and monumental undertaking. The Panel recognizes the tremendous effort made to quantify the complex and integrated H&H processes of the Everglades. The restoration of the hydrology for this area is paramount because the success of the proposed hydrologic alterations have a direct impact on the water quality, ecology, recreation, and water supply of the entire region. The H&H analyses included in the CEPP DPIR/EIS follow USACE standards and employ reasonable and appropriate numerical models. These models will be used along with an adaptive management strategy to aid in the restoration

of the domain with an estimated cost of $1.7 billion. With the success of the restoration efforts resting squarely on the shoulders of the H&H analysis, the Panel believes model uncertainty should be addressed. The model uncertainty, especially as it relates to proposed design alternatives, requires further explanation. In addition, the propagation of model parameter uncertainty and its effect on proposed design criteria needs further documentation. The ultimate success of the restoration efforts in improving the water quality, ecology, recreation, and water supply would benefit from being reported in a probabilistic fashion.

Geotechnical Engineering – The overall geotechnical engineering issues associated with the TSP as presented in the CEPP DPIR/EIS are comprehensive and technically well supported. Geotechnical issues associated with underseepage of levees to the degree that excessive seepage does not occur yet ample water supply is provided inside the levees has been adequately addressed and is well-supported by appropriate technical analyses and evaluations. Geotechnical engineering concerns associated with potential overtopping of levees and other flood damage associated with rainfall events greater than the 100-year return frequency design storm are considered to be stop-log issues that may need further analyses before being included in the final report.

Table 3. Overview of Eight Final Panel Comments Identified by the CEPP IEPR Panel

No.	Final Panel Comment
	Significance – High
1	Impacts to navigation on the Okeechobee Intercoastal Waterway (OIWW) as a result of the Tentatively Selected Plan (TSP) have not been addressed.
2	Unresolved issues between the U.S. Army Corps of Engineers (USACE) and Tribes related to possible impacts to cultural resources (including human remains/burial sites) within the project area could affect project implementation.
	Significance – Medium
3	The Seminole Tribe's concern with what they consider an inadequate water supply for the environment (western basins) has not been addressed.
4	The process for screening management measures does not detail benefits to the Everglades system versus estimated costs.
5	Due to uncertainty related to the hydrologic and hydraulic (H&H) model parameters, model performance and predictive uncertainty could not be assessed.
6	Impacts that severe rainfall events above the 100-year return frequency design storm will have on components of the selected project alternative have not been addressed.
	Significance – Low
7	A monitoring network/plan to measure the Central Everglades Planning Project (CEPP) performance has not been included in the adaptive management strategy.
8	A clear discussion of the rationale for selecting the Unit Day Value (UDV) method to analyze recreation value rather than a site-specific model is not presented.

6. REFERENCES

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APPENDIX A

Final Panel Comments

on the

CEPP DPIR/EIS

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Final Panel Comment 1

Impacts to navigation on the Okeechobee Intercoastal Waterway (OIWW) as a result of the Tentatively Selected Plan (TSP) have not been addressed.

Basis for Comment

The National Environmental Policy Act clearly states that any and all potentially significant impacts of the TSP must be addressed.

The OIWW provides economically and politically important commerce between the eastern and western coasts of Florida. The waterway connects the Atlantic Intracoastal Waterway to the Gulf Intracoastal Waterway and is a congressionally authorized project, with depths and operations required for efficient navigation on the system.

The Central Everglades Planning Project Draft Integrated Project Implementation Report and Environmental Impact Statement and its appendices do not discuss the waterway system and do not address potential impacts to commercial and recreational navigation as a result of the TSP. For example, increased releases from either the Caloosahatchee River or the St. Lucie Canal could reduce depths in the OIWW below authorized levels. Although it is possible that the TSP could improve navigation and produce net positive National Economic Development (NED) and Regional Economic Development (RED) impacts, the review documents do not discuss potential navigation impacts at all.

Significance – High

Impacts to navigation could affect the justification or selection of the TSP, because other alternatives may have less negative or more positive impacts to the OIWW.

Recommendations for Resolution

1. Discuss the impacts of the various alternative plans to commercial and recreational navigation on the OIWW.
2. Quantify any seasonal differences in channel depths between the with- and without-project conditions.
3. Quantify any potential losses or gains in NED or RED benefits or costs associated with implementation of the TSP.
4. Demonstrate how the TSP would not negatively impact congressionally authorized project purposes of the OIWW, or how the TSP could positively impact these purposes.

Final Panel Comment 2

Unresolved issues between the U.S. Army Corps of Engineers (USACE) and Tribes related to possible impacts to cultural resources (including human remains/burial sites) within the project area could affect project implementation.

Basis for Comment

The Central Everglades Planning Project (CEPP) Draft Integrated Project Implementation Report and Environmental Impact Statement (DPIR/EIS), Appendix C, Environmental and Cultural Resources, indicates that human remains exist at a Tribal site within the project area and that the potential for mitigation has not been determined. Appendix C also states that mitigation will be determined by consultation once the project is implemented. The Panel understands that these sites cannot be identified on a map, so panel members are not certain whether this site is related to concerns expressed in the following paragraph or is a separate issue.

In the Appendix C.5 correspondence between USACE and the Seminole and Miccosukee Tribes, it is apparent that there are ongoing negotiations to resolve concerns of the Seminole Tribe related to the possible inundation of cultural resources (specifically, burial sites) as a result of CEPP actions. USACE's interim response states that there are no anticipated issues concerning cultural resources for the project. This appears to be in conflict with a March 19, 2013, letter to Eric Summa from Paul Blackhouse, Ph.D., Tribal Historic Preservation Office for the Seminole Tribe (Appendix C, pp. 954-55), in which the Tribe expresses concern that areas with important cultural remains may be inundated with more water than had been estimated in the past.

Cultural resources, including burial sites, have a significant religious/cultural importance to the Tribes and are protected under the National Historic Preservation Act of 1966. If not resolved, this issue has the potential to impact the project schedule and/or implementation of specific projects.

Significance – High

Unresolved issues could escalate if it is determined that cultural resources will be adversely impacted by the CEPP or if the Seminole and/or Miccosukee Tribes decide to take action to stop one or more the proposed changes in the CEPP plan.

Recommendations for Resolution

1. Complete coordination with the Seminole and Miccosukee Tribes and prepare a final agreement to include in the CEPP DPIR/EIS that resolves all cultural issues.
2. Clarify in the CEPP DPIR/EIS that the Tribes indicate satisfaction with, and agree to, the plan of action to address cultural issues.

Final Panel Comment 3

The Seminole Tribe's concern with what they consider an inadequate water supply for the environment (western basins) has not been addressed.

Basis for Comment

Page 5-57 of the Central Everglades Planning Project (CEPP) Draft Integrated Project Implementation Report and Environmental Impact Statement (DPIR/EIS) states the following: "Representatives for the Seminole Tribe have indicated that none of the CEPP alternatives provide additional water to the Seminole Big Cypress Reservation and therefore do not address the problems they have identified in the western basins."

The Panel found four items suggesting that the concerns of the Seminole Tribe (Tribe) are not adequately addressed.

1. The western basins (C-139, Feeder Canal, L-28 and L-28 Gap) are not clearly defined; therefore, it is not possible to determine whether the CEPP DPIR/EIS response addresses the Tribe's concerns about the inadequate water supply for the western basins. The only other use of the term "feeder canal" in the DPIR/EIS is a reference to "a new feeder canal leading from the Miami Canal on the west running east to the A-2 Compartment." It is not clear if this is the feeder canal of concern to the Tribe. Similar concerns exist for the other sites that are identified as western basins.

   The Panel does note that USACE's response to the Tribe's concerns is found on page 5-57 of the CEPP DPIR/EIS. The response focuses on how CEPP will improve northern Water Conservation Area (WCA)-3A and the Rotenberger Tract (both part of the Everglades Protection Area) that will benefit the Tribe (EIS, pages 5-56 and 5-57). The Panel understands that these projects are located in the western portion of the CEPP, but it is not clear if these are related to the western basins that are of concern to the Tribe.
2. Page 5-57 of the CEPP DPIR/EIS states that the Tribe expressed concern about the lack of monitoring data and models for the western basins.
3. The CEPP DPIR/EIS (page 5-56) describes a Task Force created to discuss the tribe's concerns but does not report on the Task Force's findings or any recommendations.
4. Page 5-56 of the CEPP DPIR/EIS mentions a Minority View document prepared by the Tribe. In this document, they request a response to "the Tribe's long standing concerns for natural systems in the western basins of the Everglades:
   - adequate water supply for the environment in the western basins
   - the lack of attention by federal and state resource agencies on western basin conditions"

The Seminole Tribe's environmental and water supply concerns relative to CEPP

projects may or may not be relevant. The Panel did not find a clear explanation in the project documents that discusses whether the Tribe's concerns are within the scope of the CEPP.

Significance – Medium

Concerns regarding the inadequate water supply to the western basins, a lack of monitoring data and models, and a lack of information concerning the status of the Task Force are not clearly described in the CEPP DPIR/EIS.

Recommendations for Resolution

1. Define the western basins and state whether they are within or outside of the CEPP project area.
2. Clarify whether the issues raised in the Tribe's Minority View are relevant to CEPP.
3. Summarize the actions of the Task Force created to address the Tribe's concerns.
4. Include the Tribe's Minority View as an appendix or annex.

Final Panel Comment 4

The process for screening management measures does not detail benefits to the Everglades system versus estimated costs.

Basis for Comment

While the list and descriptions of the management measures considered for future analysis were well developed and represented a reasonably broad array of potential actions, no information regarding costs versus potential ecosystem restoration benefits of the measures considered was provided in the Central Everglades Planning Project Draft Integrated Project Implementation Report and Environmental Impact Statement (CEPP DPIR/EIS).

Many management measures were screened out based on assumptions of costliness, and the Panel cannot confirm that these assumptions were valid. An assumption of costliness is rarely a valid reason for screening out a measure.

The assumption of costliness alone makes it difficult for the Panel to conclude that (a) all potentially productive management measures were carried forward, and (b) no potentially productive management measures were screened out.

Significance – Medium

The understanding and completeness of the CEPP DPIR/EIS are affected by the lack of data on costs versus potential ecosystem restoration benefits of the measures that were screened out.

Recommendations for Resolution

1. Provide basic, rough order-of-magnitude estimates of the costs and outputs of the measures that were not carried forward.
2. Develop thumbnail level-of-detail analyses of costs, outputs, and effectiveness of the management measures that were screened out.
3. Describe why other measures were determined to be less costly or more productive.

Final Panel Comment 5

Due to uncertainty related to the hydrologic and hydraulic (H&H) model parameters, model performance and predictive uncertainty could not be assessed.

Basis for Comment

The H&H analyses and adaptive management strategies do not acknowledge model parameter uncertainty, which results in model predictive uncertainty. All H&H models have uncertainties in both the boundary conditions and model parameters. A thorough modeling study should include parameter uncertainty and sensitivity analysis during the model development and calibration phase because the predictive model uncertainty in the H&H models may impact the final design (Mishra, 2009).

For example, the U.S. Army Corps of Engineers' Hydrologic Engineering Center-River Analysis System (HEC-RAS) analysis in Appendix A utilizes an assumed Manning's 'n' to represent the channel friction. The friction factor was referenced to "C&SF Project General Studies and Reports, Part I, Supplement 18," which was not reviewed by the Panel. The friction factor selected by the modeler was used in most of the HEC-RAS models in Appendix A, although Appendix A, Section 5, specified an unexplained variation of Manning's 'n' that was different from the other analyses. The uncertainty of the friction factors can be addressed by simulating the possible range of input parameters (simulating the low and high Manning's 'n' from the literature).

As shown in the table below, the 0.035 friction factor used in the predictive models could be as low as 0.025 and as high as 0.04 (Chow, 1959). The Central Everglades Planning Project (CEPP) Draft Integrated Project Implementation Report and Environmental Impact Statement (DPIR/EIS) uses an average friction factor compared to the literature. As the table shows, the uncertainty in the friction factor defines the range of possible factors that could be utilized for modeling. The CEPP should simulate the low and high possible friction factors and demonstrate their effect on the stage in the channel. These equally probable model parameters should be used in the design metrics.

4. Excavated or Dredged Channels			
a. Earth, straight, and uniform			
1. clean, recently completed	0.016	0.018	0.020
2. clean, after weathering	0.018	0.022	0.025
3. gravel, uniform section, clean	0.022	0.025	0.030
4. with short grass, few weeds	0.022	0.027	0.033
b. Earth winding and sluggish			
1. no vegetation	0.023	0.025	0.030
2. grass, some weeds	*0.025*	*0.030*	*0.033*
3. dense weeds or aquatic plants in deep channels	*0.030*	*0.035*	*0.040*
4. earth bottom and rubble sides	0.028	0.030	0.035
5. stony bottom and weedy banks	0.025	0.035	0.040
6. cobble bottom and clean sides	0.030	0.040	0.050

Friction factor used in the CEPP basis for channel design:

Manning's n: $n_{bank} = 0.05$, $n_{canal} = 0.035$

A comprehensive list of friction factors is shown below:

Source: Chow (1959)

Significance – Medium

Full documentation of model parameter uncertainty is necessary because the uncertainty influences the predictive simulation results and the proposed design.

Recommendations for Resolution

1. Discuss predictive model uncertainty in the CEPP DPIR/EIS and include, at minimum, a range of possible outcomes defined based on a range of potential input parameter uncertainty.
2. Document predictive model performance assessment, including parameter sensitivity and uncertainty analysis.
3. Document predictive model results for low and high friction factors.

Literature Cited:

Chow, V.-T. (1959). Manning's n Values: Reference tables for Manning's n values for Channels, Closed Conduits Flowing Partially Full, and Corrugated Metal Pipes. Available at http://www.fsl.orst.edu/geowater/FX3/help/8_Hydraulic_Reference/Mannings_n_Tables.htm

Mishra, S. (2009). Uncertainty and sensitivity analysis techniques for hydrologic modeling. J. Hydroinform, 11.3-4: 282-296. Available at http://www.iwaponline.com/jh/011/0282/0110282.pdf.

Final Panel Comment 6

Impacts that severe rainfall events above the 100-year return frequency design storm will have on components of the selected project alternative have not been addressed.

Basis for Comment

Rainfall events in excess of the 100-year return frequency design storm will have detrimental impacts on operation, maintenance, and performance of project components from the maximum flood elevation of Lake Okeechobee to the flood protection of critical outflow structures (pump stations, gated spillways, etc.). These issues are critical in the evaluation of hydrological design criteria for the Central Everglades Planning Project (CEPP). Potential detrimental impacts of floodwater overtopping project components during severe rainfall events are a small but highly important element of the project and are directly related to evaluation of project performance.

The hydrologic model is based on the assumption that a 100-year return frequency rainfall event will occur over the entire Everglades watershed. This assumption results in modeling a rainfall distribution that has a lower probability of occurring because of the magnitude of the area covered by a single rainfall event. Conversely, the occurrence of a rainfall event greater than the 100-year return frequency design rainfall has a high probability of occurring within a major portion of the watershed as a result of frequently occurring tropical depressions, tropical storms, and hurricanes that occur in central Florida.

The CEPP Draft Integrated Project Implementation Report and Environmental Impact Statement (DPIR/EIS) does not explain how rainfall events greater than the 100-year return frequency rainfall event will likely impact performance of the project (for example, predicted flood elevations of Lake Okeechobee, damage to pump station and gated spillway structures, and potential new and existing levee overtopping).

Significance – Medium

The analysis of the performance of project components under conditions greater than the 100-year return frequency rainfall will provide a more comprehensive understanding of the hydrologic and hydraulic (H&H) modeling performed for this project.

Recommendations for Resolution

Summarize the results of H&H analyses of major rainfall events above the magnitude of the 100-year return frequency rainfall event that address the following:

1. equivalent rainfall distributions for various occurrence probability percentages of the watershed;
2. estimated maximum flood level elevations of Lake Okeechobee during various significant rainfall events above the 100-year rainfall event;
3. estimated maximum flood level elevations at critical components of the Tentatively Selected Plan , such as existing and new levees;
4. estimated maximum flood level protection required for various pump station, gat-

ed structures, and other critical component locations; and

5. estimated variations of percentages of modeled outflows for various significant rainfall events from those of the original H&H analyses of the 100-year return frequency design rainfall event.

Final Panel Comment 7

A monitoring network/plan to measure the Central Everglades Planning Project (CEPP) performance has not been included in the adaptive management strategy.

Basis for Comment

The Panel recognizes that Annex D provides information on the ongoing monitoring plans outside CEPP as well as a detailed account of the new monitoring programs that will be a part of CEPP. The annex describes the proposed monitoring plans for the flow equalization basin (D.1.4), water quality (Part 2), hydrometeorological (Part 3), and ecological (Part 4). Annex D also describes how monitoring will be carried out within the adaptive management strategy.

The question of how monitoring data will be used in the adaptive management process is of concern. Although the information may exist in various portions of the CEPP Draft Integrated Project Implementation Report and Environmental Impact Statement (DPIR/EIS), appendices and annexes, the Panel did not see a section of the review documents that clearly summarizes how the Tentatively Selected Plan (TSP) addresses the issues of (a) having limited data available to determine if a completed phase is functioning according to the model predictions used to determine the TSP, and (b) addressing the pitfalls of using limited data to determine if succeeding phases of a project should be modified as a part of adaptive management. This is of primary concern for the hydrological elements of CEPP because they are the driving factors in restoration of the Central Everglades.

As one phase of CEPP is completed, the Panel assumes that the data used to determine what changes may be needed to move from a Phase A to a Phase B will come from data collected over the period of time between the end of one phase and the start of the next phase. If there is a short time period (less than a year) between the end of one phase and the start of the next, there may not be enough operational data to determine whether the observed changes conform with the models predictions for this part of the TSP and whether adaptive management is necessary.

For example, after the backfilling of the Miami Canal is completed, the hydrology of the area will change. If the next phase of restoration related to the backfilling begins within 6 months after the canal is filled, the Panel questions how it will be determined whether (a) filling the canal resulted in predicted changes based on the hydrologic model and (b) proceeding to the next phase is advisable without the need to modify the phase by applying the guidance in the adaptive management plan.

Significance – Low

A clear summary explaining how monitoring data will be used in the adaptive management process would improve the technical credibility of the document.

Recommendations for Resolution

1. Prepare a summary section for the CEPP DPIR/EIS that explains how monitoring

data will be used to determine if the original model was a good prediction of what really occurred.

2. Clarify what data will be used during adaptive management, and demonstrate that the data used will be of sufficient duration to result in modeling outcomes that have a high degree of reliability.
3. Prepare a summary section for the CEPP DPIR/EIS that explains how monitoring data will be analyzed to decide if adaptive management is necessary.

Final Panel Comment 8

A clear discussion of the rationale for selecting the Unit Day Value (UDV) method to analyze recreation value rather than a site-specific model is not presented.

Basis for Comment

Recreation in the study area is an economically and culturally important resource of the Everglades system, and the Central Everglades Planning Project Draft Integrated Project Implementation Report and Environmental Impact Statement (DPIR/EIS) explain that recreational visitation comes from around the nation and the world. The Everglades system provides a unique recreational experience, and, accordingly, has a very high economic value to the region, the nation, and the globe.

Appendix E of U.S. Army Corps of Engineers (USACE) Engineer Regulation (ER) 1105-2-100 states that when recreational visitation exceeds 750,000 visitors per annum, or when recreational benefits provide a significant portion of the total project outputs, a regional or site-specific model is preferred (USACE, 2000).

The review documents do not provide a rationale for using the less sophisticated, non-site-specific UDV method, nor do they explain why the Travel Cost Method (TCM) or Contingent Value Survey (CVS) method was not employed. Therefore, it is difficult to understand how recreation plays a role in developing the range of alternatives.

Significance – Low

Because UDV represents a relatively unsophisticated means of measuring recreation value, the reasons for using UDV should be presented to support the development of alternatives in the DPIR/EIS.

Recommendations for Resolution

1. Identify any recent and applicable TCM or CVS analyses and discuss their findings.
2. Explain why the UDV method was selected over regional, recent and/or applicable site-specific or regional models.
3. Discuss the differences between any identified TCM or CVS analyses and the UDV method employed in the recreation analysis, and explain why the UDV is more appropriate.

Literature Cited:

USACE (2000). Planning Guidance Notebook. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Regulation (ER) No. 1105-2-100. April 22.

APPENDIX B

Final Charge to the Independent External Peer Review Panel as Submitted to USACE on August 29, 2013

on the

CEPP DPIR/EIS

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Charge Questions and Guidance to the Peer Reviewers for the Independent External Peer Review of the Central Everglades Planning Project Draft Project Implementation Report and Environmental Impact Statement

BACKGROUND

The Central and Southern Florida (C&SF) project, authorized by Congress in 1948 expanded the existing network of canals, levees, water storage areas and water control structures in south Florida. Project objectives include flood control, regional water supply, prevention of saltwater intrusion, water supply to Everglades National Park, preservation of fish and wildlife, recreation and navigation. While fulfilling these objectives, the project has had unintended adverse effects on the natural environment by disrupting the pre-existing hydrologic regime of the Everglades and south Florida ecosystem. As a result, in 1996, the U.S. Army Corps of Engineers (USACE) in conjunction with the South Florida Water Management District (SFWMD) was directed to develop a comprehensive plan to restore, preserve and protect the south Florida ecosystem while providing for other water-related needs of the region such as water quality and flood protection. The resulting plan was submitted to Congress on July 1, 1999 and consists of proposed structural and operational modifications to the C&SF project.

The recommended plan, identified as the Comprehensive Everglades Restoration Plan (CERP), was approved to provide a framework for the restoration of the natural system under Section 601 of the Water Resources Development Act of 2000. The plan, as documented in the Comprehensive Review Study (Yellow Book), consists of 68 different components that work together, to restore, preserve and protect the south Florida ecosystem while providing for other water related needs of the region. The CERP components will be implemented over an approximate 40-year period. Together, these components will benefit the ecological function of more than 2.4 million acres of the south Florida ecosystem by improving and/or restoring the proper quantity, quality, timing and distribution of water in the natural system while also addressing other concerns such as urban and agricultural water supply and maintaining existing levels of flood protection. The CERP intends to achieve more natural flows by re-directing current flows that go straight to tide, to a more restored flow of water that is distributed throughout the system similar to the pre-drainage conditions.

Since 2000, much progress has been made toward achieving the goals of the restoration plan. Construction has begun on the first generation of CERP project modifications already authorized by Congress. Project Implementation Reports (PIRs) have also been completed, or are nearing completion, for the second generation of CERP projects for Congressional authorization. The next step for implementation of CERP is to redirect a portion of water that is currently discharged to the east and west coast estuaries from Lake Okeechobee and restore water flow to the south, allowing for restoration of natural habitat conditions and water flow in the central Everglades and re-connecting the ecosystem from Lake Okeechobee to Everglades National Park (ENP) and Florida Bay. The Central Everglades Planning Project (CEPP) focuses on developing the next phase, or third generation, of CERP projects for the central Everglades region and it is being conducted as a national pilot project in the Corps' streamlined planning process.

The CEPP will develop the initial increment of the project features that provide for storage, treatment and conveyance south of Lake Okeechobee, decompartmentalization by removal of canals and levees within Water Conservation Area 3 (WCA 3), and seepage management to retain water within the natural system. The study area for the CEPP encompasses a portion of the greater Everglades system including Lake Okeechobee, the Northern Estuaries (St. Lucie River and Indian River Lagoon, and the Caloosahatchee River and Estuary), the Everglades Agricultural Area, the Water Conservation Areas, Everglades National Park (ENP), Southern Estuaries (Florida Bay and Biscayne Bay), and the Lower East Coast Area (also referred to as the Atlantic Coastal Ridge).

The purpose of the CEPP is to restore the habitat in the Everglades ecosystem and Florida Bay by improving the quantity, quality, timing and distribution of water flows to the central Everglades (WCA 3 and ENP). The CEPP will be composed of increments of project components that were originally recommended in the 1999 Yellow Book. The scope of the CEPP will include increments of water storage, treatment and conveyance; decompartmentalization and sheetflow enhancement; and seepage management. The following specific features were part of the Yellow Book Plan:

- Everglades Agricultural Storage Reservoirs
- Flow to Northwest and Central Water Conservation Area 3A
- Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement
- Dade-Broward Levee/Pennsuco Wetlands
- L-31N Improvements for Seepage Management and S-356 Structures
- Everglades Rain-Driven Operations

The CEPP has been approved to participate in the USACE Pilot Study Process. The pilot initiative will provide an opportunity to test principles that have been outlined in the USACE Recommendations for Transforming the Current Pre-Authorization Study Process (January 2011) and associated presentation materials.

OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Central Everglades Planning Project Draft Project Implementation Report and Environmental Impact Statement (hereinafter: CEPP IEPR) in accordance with the Department of the Army, USACE, Water Resources Policies and Authorities' *Civil Works Review* (EC 1165-2-214, dated December 15, 2012), and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004).

Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. Peer review typically evaluates the clarity of hypotheses, validity of the research design, quality of data collection procedures, robustness of the methods employed, appropriateness of the methods for the hypotheses being tested, extent to which the conclusions follow from the analysis, and strengths and limitations of the overall product.

The purpose of the IEPR is to assess the "adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (EC 1165-2-214; p. D-4) for the CEPP PIR/EIS documents. The IEPR will be limited to technical review and will not involve policy review. The IEPR will be conducted by subject matter experts (i.e., IEPR panel members) with extensive experience in, Civil Works planning, environment/ecological evaluation, economics, hydraulic engineering and geotechnical engineering issues relevant to the project. They will also have experience applying their subject matter expertise to ecosystem restoration.

The Panel will be "charged" with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. Per EC 1165-2-214, Appendix D, review panels should identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods. Review panels should be able to evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable. Reviews should focus on assumptions, data, methods, and models. The panel members may offer their opinions as to whether there are sufficient analyses upon which to base a recommendation.

DOCUMENTS PROVIDED

The following is a list of documents, supporting information, and reference materials that will be provided for the review.

Documents for Review

The following documents are to be reviewed by designated discipline:

Title	Approx. No. of Pages	Required Disciplines
Primary Review Documents		
CEPP Draft PIR EIS	287	All Disciplines
Risk Register	5	All Disciplines
Appendix A - Engineering	207	Hydraulic and Geotechnical Engineering
Appendix A - Engineering Annexes A - D		
H&H Design	54	Hydraulic Engineering
Hydrologic Modeling	428	Hydraulic Engineering
Civil Project Points	6	Geotechnical Engineering
Civil Plates	20	Geotechnical Engineering
Mechanical Plates	5	Geotechnical Engineering

Title	Approx. No. of Pages	Required Disciplines
Appendix B - Cost Engineering	277	Civil Works and Environmental
Appendix C - Environmental and Cultural Resources Information	966	Civil Works
Appendix D - Real Estate	52	Civil Works
Appendix E - Plan Formulation	98	Civil Works
Appendix F - Recreation Resources	23	Civil Works and Environmental
Appendix G - Benefits Model	124	Civil Works and Environmental
Annex D - Adaptive Management and Monitoring Plans	223	Environmental
Annex E - RECOVER System-wide Evaluation	111	All disciplines
Annex H - Hazardous, Toxic and Radioactive Waste	216	Environmental
Annex I - Sea Level Rise Assessment	37	All disciplines
Assessment of Ecosystem Service Values for the Central Everglades Planning Project	72	Civil Works and Environmental
Primary Document Total (including text, tables, and graphics)	**3,295**	
Supplemental Documents		
Appendix A - Engineering Annexes G1 - G4	1894	
Annex A - Fish & Wildlife Coordination/ESA Compliance	614	
Annex B - Analysis Required by WRDA 2000 & State Law	78	
Annex C - Draft Project Operating Manual	51	
Annex F - Water Quality Assessment	40	
Annex G - Invasive and Nuisance Species Management Plan	62	
Supplemental Document Total (including text, tables, and graphics)	**2,739**	
Total (including text, tables, and graphics)	**6,034**	

Documents for Reference

- USACE guidance *Civil Works Review*, (EC 1165-2-214, December 15, 2012)
- USACE ER 1110-1-8159, Engineering and Design, DrChecks, May 10, 2001.

- Office of Management and Budget's Final Information Quality Bulletin for Peer Review (December 16, 2004)

SCHEDULE

This final schedule is based on the August 7, 2013 receipt of the final review documents. The schedule will be revised upon receipt of final review documents.

Task	Action	Due Date
Conduct Peer Review	Battelle sends review documents to panel members	8/27/2013
	Battelle convenes kick-off meeting with panel members	8/28/2013
	Battelle convenes kick-off meeting with USACE and panel members	8/28/2013
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	9/6/2013
	Panel members complete their individual reviews	9/11/2013
Prepare Final Panel Comments and Final IEPR Report	Battelle provides panel members with talking points for Panel Review Teleconference	9/17/2013
	Battelle convenes Panel Review Teleconference	9/19/2013
	Battelle provides Final Panel Comment templates and instructions to panel members	9/20/2013
	Panel members provide draft Final Panel Comments to Battelle	9/25/2013
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	9/25-10/4/2013
	Battelle finalizes Final Panel Comments	10/4/2013
	Battelle provides Final IEPR Report to panel members for review	10/8/2013
	Panel members provide comments on Final IEPR Report	10/8/2013
	*Battelle submits Final IEPR Report to USACE	10/10/2013
Comment/ Response Process	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	10/14/2013
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process (if necessary)	10/15/2013
	USACE provides draft PDT Evaluator Responses to Battelle	10/18/2013
	Battelle provides the panel members the draft PDT Evaluator Responses	10/21/2013
	Panel members provide Battelle with draft BackCheck Responses	10/24/2013
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	10/25/2013
	Battelle convenes Comment-Response Teleconference with panel members and USACE	10/25/2013
	USACE inputs final PDT Evaluator Responses to DrChecks	10/29/2013
	Battelle provides PDT Evaluator Responses to panel members	10/30/2013

Task	Action	Due Date
	Panel members provide Battelle with final BackCheck Responses	11/1/2013
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	11/4/2013
	*Battelle submits pdf printout of DrChecks project file	11/4/2013
Civil Works Review Board (CWRB)	Panel prepares and/or reviews slides for CWRB	TBD
	Civil Works Review Board	2/18/2014

CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the CEPP PIR/EIS documents are credible and whether the conclusions are valid. The Panel is asked to determine whether the technical work is adequate, competently performed, properly documented, satisfies established quality requirements, and yields scientifically credible conclusions. The Panel is being asked to provide feedback on the economic, engineering, environmental resources, and plan formulation. The panel members are not being asked whether they would have conducted the work in a similar manner.

Specific questions for the Panel (by report section or Appendix) are included in the general charge guidance, which is provided below.

General Charge Guidance

Please answer the scientific and technical questions listed below and conduct a broad overview of the CEPP PIR/EIS documents. Please focus your review on the review materials assigned to your discipline/area of expertise and technical knowledge. Even though there are some sections with no questions associated with them, that does not mean that you cannot comment on them. Please feel free to make any relevant and appropriate comment on any of the sections and appendices you were asked to review. In addition, please note the following guidance. Note that the Panel will be asked to provide an overall statement related to 2 and 3 below per USACE guidance (EC 1165-2-214; Appendix D).

1. Your response to the charge questions should not be limited to a “yes” or “no.” Please provide complete answers to fully explain your response.
2. Assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, and any biological opinions of the project study.
3. Assess the adequacy and acceptability of the economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, and models used in evaluating economic or environmental impacts of the proposed project.
4. If appropriate, offer opinions as to whether there are sufficient analyses upon which to base a recommendation.
5. Identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods.

6. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable
7. Please focus the review on assumptions, data, methods, and models.

Please **do not** make recommendations on whether a particular alternative should be implemented, or whether you would have conducted the work in a similar manner. Also please **do not** comment on or make recommendations on policy issues and decision making. Comments should be provided based on your professional judgment, **not** the legality of the document.

1. If desired, panel members can contact one another. However, panel members **should not** contact anyone who is or was involved in the project, prepared the subject documents, or was part of the USACE Agency Technical Review (ATR).
2. Please contact the Battelle Project Manager (Dick Uhler, uhlerr@battelle.org) or Program Manager (Karen Johnson-Young (johnson-youngk@battelle.org) for requests or additional information.
3. In case of media contact, notify the Battelle Program Manager, Karen Johnson-Young (johnson-youngk@battelle.org) immediately.
4. Your name will appear as one of the panel members in the peer review. Your comments will be included in the Final IEPR Report, but will remain anonymous.

Please submit your comments in electronic form to Dick Uhler, uhlerr@battelle.org, no later than September 11, 2013, 10 pm ET.

Independent External Peer Review of the

Central Everglades Planning Project Draft Project Implementation Report and Environmental Impact Statement

Charge Questions and Relevant Sections as Supplied by USACE

General Questions

1. In your opinion, are there sufficient analyses upon which to base the recommendation?
2. Are the assumptions made for the planning, economic, engineering, and environmental analyses sound?
3. Are the economic, engineering, and environmental methods, models, and analyses used adequate, acceptable and support the recommended plan?
4. Can the combination of regional hydrologic models and the CEPP planning model accurately predict ecosystem changes?
5. In general terms, are the planning methods sound?
6. Are the interpretations of analysis and conclusions based on the analysis reasonable?
7. Comment on whether there is enough detail in and the accuracy of the project background/history.
8. Please comment on whether the document has clearly and completely described both the purpose of and the need for the proposed restoration.
9. Do the observed changes for performance indicators address the target condition? What, if any, modifications could be made to the restoration and monitoring process.
10. Based on your experience, are the recommendations comprehensive and adequate? What, if anything, is missing?
11. Do you have any important concern with the document or its appendices not covered by other questions?

Plan Formulation

12. Have the most appropriate Performance Measures been used in the Study? Is there any conflict between them?
13. Have an adequate number of alternative been evaluated?

14. Are the problems, opportunities, objectives, and constraints adequately and correctly defined?

15. Was a reasonably complete array of possible measures considered in the development of alternatives? Were any measures screened out too early?

16. Please comment on the screening of the proposed alternatives. Are the screening criteria appropriate? Are the results of the screening acceptable?

17. Comment on whether the information, analysis and formulation used support the selected alternative. Does the plan recommended meet the study objectives and avoid violating the study constraints?

18. Please comment on the likelihood of the recommended plan to achieve the expected outputs.

Engineering

19. Is the Level of Design in the Engineering appendix adequate given that this is a pilot study using the smart planning process? In the Smart Planning process less design detail is required than standard studies.

20. Are the models' capabilities and limitations clearly defined?

21. Is the methodology used to conduct the model sensitivity analysis complete and valid?

22. Were the technical assumptions used to determine the preferred alternative valid?

Cost

23. Was the methodology used to develop the baseline cost estimate adequate and valid?

24. Are the key assumptions used to complete the cost and schedule risk analysis adequate? Is anything missing? In your expert opinion, do the major findings of the risk analysis provide adequate support for scheduling, budgeting, and project control purposes?

25. Comment on the extent to which the cost estimates are clearly explained, adequate, and reasonable.

Environmental

26. Are the scope and detail of the potential adverse effects that may arise as a result of project implementation sufficiently described and comprehensive?

27. Is the documentation of compliance with Federal laws and regulations clear and complete?

28. Are the Cultural Resources adequately identified, well defined, and impacts sufficiently documented?

29. Have all the concepts for the ecological integrity and restoration of the project area been considered? What, if anything, is missing?

30. Comment on the environmental considerations of the project and the predicted impacts. What, if anything, is missing?

31. Comment on the accuracy and comprehensiveness of the discussion of threatened and endangered species in the study area.

32. Comment on the accuracy and comprehensiveness of the discussion of fish and wildlife in the study area.

33. Comment on the accuracy and comprehensiveness of the discussion of water quality in the study area.

Economic Analysis

34. Do you agree with the general analyses of the existing socio –economic resources in the study area?

35. Was the methodology used to conduct the incremental cost analysis adequate and valid?

Monitoring and Adaptive Management

36. Are the proposed monitoring procedures clear and appropriate?

37. Is the proposed monitoring adequate to determine project success or adaptive management needs?

38. Are the costs for administering a monitoring and assessment program reasonable?

39. Is adaptive management adequately addressed?

40. Are monitoring capabilities and limitations clearly defined?

Summary Questions

41. Please identify the most critical concerns (up to 5) you have with the project and/or review documents. These concerns can be (but do not need to be) new ideas or issues that have not been raised previously.

42. Please provide positive feedback on the project and/or review documents.