

## ICU Preliminary Draft – Response to Comments 092305

	Comment	Response
	Susan Markley, Miami-Dade DERM	
1	<p>Detailed assessments in Appendix B for Florida Bay, Biscayne Bay and for South Miami-Dade flood control show that in virtually all cases, targets are not met. Perhaps even more significant, however, is that “future with CERP” shows poorer performance than “future without” and sometimes even the “baseline” for Miami River, North Biscayne Bay, Central Biscayne Bay, Snake Creek, South Miami-Dade ag area water levels, and South Miami-Dade stage differences. Although mentioned in the body of the report, the significance is understated in the new Conclusions section. This suggests a major inadequacy of the plan (or perhaps modeling of the plan) with respect to meeting CERP goals and objectives at the far southern end of the system.</p>	<p>Text has been added to strengthen the bullet in conclusions section that discusses poor Biscayne Bay performance and S MD agricultural area.</p>
2	<p>In the case of Biscayne Bay, if “with CERP” fails to meet targets and provides less water than “no project” or “baseline,” it suggests a potential “existing legal source” conflict. Flooding occurrences and water levels in south Miami-Dade are also “worse” in the with CERP than without or baseline, suggesting a violation of the “Savings Clause”. This may imply an inadequate total amount of water, or a substantive problem with the water budget that could require modifications that will change other CERP projects and target outcomes.</p>	<p>Language has been added to the conclusions section of the ICU report to identify areas with potential savings clause issues.</p>
3	<p>The summary table in the Conclusions section (page 36-37) which gives a “color” rating to D13R and CERPA does not adequately reflect the content of the narrative sections or appendices. In particular, a “Green” rating for Florida Bay and Biscayne Bay, and LECSA Flood Control which have not met targets (or worse), seems inappropriate and understates the significance of the analyses, particularly when the new simulation outcome is reported as “No Change”. These should be listed as “Yellow”. LECSA Flood Control should be “red”, since it appears that CERP will reduce level of flood protection.</p>	<p>The colors referenced in the Conclusions section of the ICU report refer to those documented in the Restudy Final Integrates EIS. Language has been added to this section of the report to better identify the origination and meaning of these colors and their relationship to CERPA performance.</p>

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4	<p>On either page 35 or 36 of the Conclusions section, where there are “bulleted” lists of deficiencies, LECSA Flood Protection problems should be listed. I am not personally certain whether these were identified in the Restudy, or if the performance of CERPA is worse regard to water levels and stages in south Miami-Dade. But this is an important performance shortfall, and needs to be included.</p>	<p>Text has been added as suggested.</p>
5	<p>We support the brief statement at the beginning of the Southern Estuaries section of Appendix B which notes emerging scientific concern regarding targets derived from the NSM. As noted, NSM targets are not consistent with empirical and paleoecological information, and that targets reflecting lower salinities or patterns associated with greater volumes/distribution of freshwater may be more appropriate. It is recommended that more emphasis be placed on the significance of this conclusion, since this would suggest that the “future with CERP” may be even farther from reaching appropriate restoration targets than this analysis describes. We note a sentence to that effect in the “Florida Bay” section (page 25) of the report, but not in the Biscayne Bay section.</p>	<p>No change in report - statement referred to pertains to Biscayne Bay also.</p>
6	<p>Given the above, we cannot concur with the overall conclusion statement in lines 9-13 on page 37, which infers that ICU shows overall that CERP will successfully meet objectives, and that shortfalls are essentially technicalities. We do not believe that the shortfalls noted above are localized or that we can be certain they will be corrected by some minor project, operations, or model refinement. Rather, they argue for serious reconsideration of the water budget or continued efforts to identify additional water. This would not be something that can occur inside of ICU, but does demand a significant “adaptive management” response. Because some future readers may just flip to the “Conclusions” without reading other, more detailed sections, it is important that this section be more transparent with respect to these shortfalls</p>	<p>The report has been revised to indicate that RECOVER's technical report will be considered by the Corps and SFWMD to determine whether CERPA meets the goals and purposes of the plan as outlined in the Programmatic Regulations.</p>

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7	<p>In Appendix A, the Land Use map (base or existing condition) appears to contain some inaccurate categorization for some grid units in southeast Miami-Dade. In particular, many units shown as “marl prairie” along the coast of Biscayne Bay should be “mangroves” or perhaps “forested wetlands.” Some areas shown as “row crops” may be tree or plant nurseries, or may not even be in agriculture. And, there are two grids that seem to be “open water”, which should be “mangroves”. I apologize for having never noticed this in some other venue. It may not be important to fix it for this report, but perhaps it should be reviewed more comprehensively and adjusted in underlying modeling efforts.</p>	<p>The land use map will not be changed for this report. The information provided will be forwarded to the IMC for consideration during the next periodic CERP update.</p>
	Dave Rudnik, SFWMD	
8	<p>First, regarding the table on page 36 and 37 (Susan Markley major comment 3 below), I agree that the color coding in the table could easily be misconstrued. For Florida Bay, the Restudy color reported is green and the CERP-A change, relative to the Restudy, is “no change”. While the table is technically accurate, the implication that all is well for Florida Bay – i.e. there’s no change from a green condition, so all is well – is not accurate. I suggest that a caveat should be added in a footnote to the table, suggesting (as in the text) that targets are being re-evaluated and we have concerns regarding the adequacy of any of our plans for Florida Bay (as well as Manatee Bay / Barnes Sound and Biscayne Bay).</p>	<p>A footnote has been added to the referenced table to indicate that "targets are being re-evaluated and there are concerns regarding the adequacy of NSM salinities predicted for Florida Bay. The Florida Bay Florida Keys Feasibility Study will be used to evaluate the adequacy of CERP for Florida Bay restoration and answer planning uncertainties for this region."</p>

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9	<p>Second, given the above concerns (whether CERP-A will substantially improve the southern estuaries), I concur with Susan’s point (expressed in her major comment 6) that the conclusion would benefit by overtly stating that we may have a regional problem for the southern estuaries (or perhaps simply stating that this is a “region of concern”). In particular, I disagree with wording in the statement that: “The conclusion of the ICU is that CERPA generally meets the goals and purposes of the Plan although further improvements are desirable.” This is perhaps the most important sentence in the entire report and I suggest that the word “desirable” is not appropriate. Saying further improvements are “desirable” suggests that they are wanted, but not needed. More appropriate wording would be to say further improvements “may be needed” – use of “may” is consistent with the fact that we are improving our analysis (model development and assessment) and have uncertainty regarding the accuracy of our predictions; and “needed” is consistent with the possibility that we may be faced with not succeeding in a major, high profile region unless we change our restoration plans ( a need for adaptive management in full force).</p>	<p>The report has been revised to indicate that RECOVER's technical report will be considered by the Corps and SFWMD to determine whether CERPA meets the goals and purposes of the plan as outlined in the Programmatic Regulations.</p>
10	<p>Finally, I noticed that the Florida Bay and Florida Keys Feasibility Study is never mentioned in this report. This Study is now developing better models for Florida Bay hydrologic and water quality analyses, and has explicit charge to evaluate the adequacy of CERP for Florida Bay restoration. Given that the Study is a component of CERP (suggesting that we had the foresight to know that we did not know enough about Florida Bay at the time of the Restudy) and given the concerns expressed above, I recommend that the ICU should explicitly remind the reader that we are putting a great deal of effort into address these planning uncertainties (at least for Florida Bay)</p>	<p>See response to comment 8</p>

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	Peter Ortner, NOAA	
11	<p>As written this is subject to substantial misinterpretation relative to the Southern Estuaries domain. I will make reiterate points in my remarks at the Task Force meeting as the NOAA/DOC representative there. RECOVER's Evaluation Team has already moved away from the comparison used herein that yielded the NO CHANGE with respect to Florida Bay and we must always keep in mind that the coastal ecosystem is in the mind of the taxpaying public an exceedingly high profile system. If we fail there and succeed everywhere else, we will not be judged as successful in CERP</p>	<p>The report has been revised to indicate that RECOVER's technical report will be considered by the Corps and SFWMD to determine whether CERPA meets the goals and purposes of the plan as outlined in the Programmatic Regulations.</p>
	Donna Fries, Miami-Dade WASD	
12	<p>Miami River                      The narrative description beginning on page 26 indicates that CERP A shows a large total reduction in flow through structures discharging into the Miami River. Reduced flow in the Miami River may result in encroachment of saltwater up the River into the canal system. Saltwater intrusion can affect Miami-Dade County's public drinking water wellfields. Page 29, discusses the LECSA Salt Water Intrusion targets and indicates that CERP A provides improved performance. On page B74 however, the future without project (2050B3) meets the saltwater intrusion target better than CERP A; CERP A shows a Biscayne Aquifer MFL violation at the C-9 and one at the C-4. These issues need to be clarified.</p>	<p>While there is decreased freshwater flow for CERPA compared to the 2050B3 condition (Page B74), there are no MFL violations for either condition (page B83). The MFL violations that are noted for C-4 and C-9 both occur under the 2000B3 condition.</p>

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13	<p><b>Sea Level Rise</b>                  Per the ICU document, refined projections of sea level rise are 25 cm (0.8 ft) over 1990 - 2050; however, no sea-level rise sensitivity scenarios were evaluated, although the report indicates the new projections will be used in a follow up effort. Considering the sensitivity of the hydrologic system in south Florida to water levels, a 0.8 ft rise will have consequences. Seeing that CERP A is not performing well in several areas, not including sea level sensitivity analyses would seem to indicate that CERP A will have an even lower performance in certain areas.</p>	<p>RECOVER agrees that sea-level rise will impact CERPA performance; however, the analysis to determine specific effects is not part of this report and will be undertaken as a separate planning effort. Please see Appendix D, Section 2.0 Future Without Project, for sea-level rise assumptions contained in this report.</p>
Wayne Daltry, Lee County		
14	<p>My technical comment overall is this: Is our experience in the last 5 years (the reality of drought and flood and hurricane) covered by the modeling assumptions and calibration? If yes, fine, if not, given the discussed change in rainfall patterns, maybe some base assumptions need a relook.</p>	<p>The POR for the SFWMM and NSM is from 1965-2000. The POR includes several drought years as well as several wet years. The POR will be increased as part of the next periodic CERP update. As the POR is increased, the ability to predict CERP performance will improve as well.</p>
Ben Harkenson, Palm Beach County		
15	<p>the salinity target for the Lake Worth Lagoon has been changed from 23 ppt to 15 ppt.</p>	<p>While the Planning Team recognizes that the target for this PM is being changed, it has not completed the formal approval process at the time this report was released. Once approved by the Evaluation Team, this target will be incorporated in the relevant modeling and future evaluations.</p>

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	Steve Gilbert, FWS	
16	<p>The Conclusions Section of the document does not appear to be supported by the evaluations which precede it. The bottom line conclusion is somewhat weak relative to fixing the obvious problems with both D13R and CERPA. I recognize the repercussions inherent in our saying outright that we’ve got big problems, but I also think we should not whitewash the situation either. Review of the target achievement record presented in the Conclusions section tables indicates that out of 90 some odd targets, CERPA meets about 31 percent, while coming close to target on another 16 percent. That leaves more than half (53 percent of targets) that are not met by CERPA. Under these circumstances, it is hard to buy the conclusion that CERPA generally meets the goals and purposes of the Plan and supports restoration of the south Florida ecosystem.</p>	<p>The report has been revised to indicate that RECOVER's technical report will be considered by the Corps and SFWMD to determine whether CERPA meets the goals and purposes of the plan as outlined in the Programmatic Regulations.</p>
17	<p>Table 1 (red, yellow green) should be closely checked as there appear to be lots of discrepancies with the Conclusions Section tables above it. For example, Taylor Slough, Shark River Slough, Biscayne Bay and Florida Bay all show Green for the Restudy yet the D13R tables above show that these areas are not meeting targets. Why does the table indicate there is “No Change” for Taylor Slough and Shark River Slough under CERP A when the tables above indicate that CERP A is worse in terms of meeting targets for these areas?</p>	<p>The colors referenced in the Conclusions section of the ICU report refer to those documented in the Restudy Final Integrates EIS. Language has been added to this section of the report to better identify the origination and meaning of these colors and their relationship to CERPA performance.</p>
18	<p>I think the ICU would greatly benefit from a section dealing with uncertainty. I recognize the desire to evaluate a CERP close to D13R to minimize the variables and show the differences related to just the new modeling. However, we have learned a lot since the initial planning effort and uncertainty has increased in lots of areas like ASR and wastewater reuse. These uncertainties will only make things worse relative to achieving targets. It would behoove us to be upfront and put these potential limitations out there so they can be addressed.</p>	<p>A paragraph has been added to Section 2.2 of the ICU report regarding Restudy uncertainty and the use of pilot projects to address that uncertainty.</p>

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19	The NSM section in the main document needs to include the recognized limitations for target setting especially in southern parts of the system (e.g., southern estuaries). Lots of readers will not make it to the appendix to get this important information.	A sentence has been added to Section 3.1.4 Performance Measures and Targets to indicate moving away from model-based targets.
20	With few exceptions, the Greater Everglades subunits all have the same rather generically stated CERP goal “. . . to improve the habitat and functional quality of the region through improved native plant and animal species abundance and diversity.” It would provide the reader much more information if this generic goal were made more specific by area (e.g., to restore sustainable ridge and slough topography through reintroduction of appropriate sheetflow).	Comment noted.
21	Page 5, Line 28. The concerns/limitations of using NSM for target setting should be included at the end of this paragraph. Many readers will not make it to the appendix to find this information.	See comment 19
22	Page 11, Lines 37 - 40 is redundant of what's stated in the paragraph above. It can probably be eliminated.	Upon further inspection, it has been concluded that these paragraphs are not redundant, one is for high flow (7-day moving average), and one is for extreme high flow (2-day moving average).
23	Page 11, Lines 42-43. It is not clear why decreasing high volume flows increase the number of no flow events. Is this logical or just an anomaly of the model? If there's some logical explanation, it probably ought to be added to reduce reader confusion.	Text has been revised
24	Page 16, Lines 23-24. How can the CERPA inundation period meet restoration goals when above (lines 8-19) it says the desired condition is ridge and slough and the performance under CERPA is drier than future without and is more consistent with sawgrass plains hydrology? Is the problem in the PMs we're using?	There appears to be confusion between WCA 2A and WCA 2B. WCA 2A has good inundation but too many high/low events. WCA 2B has too dry inundation, good high events, and too many low events.

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25	Page 17, Section 5.10 Northern Water Conservation Area 3A. It would be beneficial to elaborate on the restoration target for this area - - is it ridge and slough? If so, it is more than just inundation patterns, but flow that is key to its restoration.	Text has been revised
26	Page 18, Lines 28-29. What are the environmentally desirable conditions? Is there a vision of the vegetative community targeted for this area? It should be mentioned here - Line 35 indicates that it is ridge and slough habitats.	Text has been revised
27	Page 19, Line 28. Again, define the vision or target for ecologically desirable conditions (e.g., improved ridge and slough habitats, tree islands).	Text has been revised
28	Page 20, Line 25. Again, define what the vision is for ecologically desirable conditions	Text has been revised
29	Page 20, Lines 30-33. We should discuss whether these changes are beneficial or harmful to the communities targeted	Because there are not established targets for Pennsucco, it is not possible to indicate whether these changes are positive (toward targets) or negative (further from targets).
30	Page 22. Line 37-38. We should note that targets may be revised as NSM is proving unverifiable in this area.	The GE sub-team has noted that targets for IR129 are inconsistent with NSM values. No other SRS targets have been specifically questioned. Issues with IR129 have been noted on the detailed evaluation sheets
31	Page 25, Lines 44-45, Page 25 Lines 1-2. Nutrient loading from additional freshwater flow is a contentious issue. There are concerns that increased rates of DON will be entering the estuaries and be converted to available nitrogen. There should be justification for the statement that levels will be too low for eutrophication, especially if "presently proposed flow rates" will probably need to be much higher to meet even current targets, and certainly to meet new non-NSM targets.	Recent information presented to the Southern Estuaries sub-team of the RECOVER Evaluation Team indicated that Florida Bay is P limited, and additional flows of DON would not cause eutrophication of the estuary. No changes were made to the ICU report.
32	Page 27, Line 16. - I suggest replacing "values predicted by the NSM" with "targets"	Text has been revised

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33	<p>Page A1-A3, Section 1.2 Natural Systems Model. We need to insert more information here about the performance of Sens 4 (and indeed all NSM versions) especially in predicting stages that appear lower than anecdotal accounts in the glades and lower than paleosalinity data indicates in the southern estuaries. We should highlight that while this tool does provide some valuable information on seasonal and general hydrological trends, it has not been verified in the system and absolute stage values predicted are questionable.</p>	<p>There is sufficient information and reference to Appendix C already included in the text.</p>
	Heather McSharry, FWS	
34	<p>Last paragraph of Conclusions section, page 37. The statements here do not appear to match up with the information presented in the rest of the report. It seems difficult to conclude that “...CERPA overall performance is consistent with D13R” when the rest of the report documents several areas of CERPA performance shortfalls beyond those in D13R. WCA-3B high water and marl marsh performance are two examples of CERPA performance that would produce a very different and undesirable ecological outcome as compared to D13R. It is also hard to conclude that “...CERPA...supports restoration of the south Florida ecosystem” when targets are not met in so many places. I counted up the outcomes presented in the table beginning on page 32 and got 42 in which CERPA met or was close to targets and 44 in which CERPA did not meet targets. An alternative that does not meet restoration targets for more than half of the evaluations performed, including not a single target met in the southern estuaries, does not seem consistent with the goals and purposes of the CERP or restoration of the south Florida ecosystem. I suggest replacing this language with something more like this sentence from the Executive Summary: “The modeled CERPA simulation exhibits some of the same shortfalls and strengths as the Restudy, but the updated information and modeling scenarios has also led to the identification of additional areas in which CERP could improve performance.”</p>	<p>The report has been revised to indicate that RECOVER's technical report will be considered by the Corps and SFWMD to determine whether CERPA meets the goals and purposes of the plan as outlined in the Programmatic Regulations.</p>

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35	In the conclusions section, suggest labeling the table starting on page 32, line 21 as Table 1. The table beginning on page 36 would then be Table 2.	Text has been revised
36	In some cases, the characterizations in the table beginning on page 36 do not seem to match up with the ones in the table beginning on page 32. For Northwestern and Northeastern WCA-3A, the first table shows inundation targets met for D13R and not met for CERPA, so characterization in the second table should be “worse (inundation)”. For Northwestern WCA-3A, the first table shows D13R meeting extreme high targets, and CERPA not meeting them, so should be “worse (highs)” in the second table. For Eastern WCA-3A, the first table shows a mixed result for inundation, the same result for highs, but for lows, D13R meets targets and CERPA does not, so should be “worse(lows)” in second table. Big Cypress is characterized as “too dry” for CERPA and “close to target” for D13R in first table, so should be “worse” in second table.	Changes were made to NW WCA3, NE WCA3, and E WCA3. Changes were not made to Big Cypress.
37	Also on the table beginning on page 36, the characterizations of “worse” or “better” could lead a reader to add up the “betters” and “worses” to arrive at totals for the Restudy vs. CERPA, concluding that one “worse” cancels out one “better” or vice versa. This could be misleading because the magnitude and/or ecological consequences of the change towards “better” or “worse” is not captured here. For example, WCA-3B CERPA performance is characterized as better than the Restudy for low water and worse for high water. However, CERPA produces more than twice as much extreme high water as did the Restudy, in terms of %POR. The low water performance is nearly identical, with D13R at zero and 1% POR extreme low water for the two Restudy indicator regions, and CERPA at 1% POR extreme low water for the three current indicator regions. Our performance measure doc sheets provide the scientific justification for concluding that the change in extreme high performance would be expected to have much greater ecological consequences than the change in low water performance. The ET’s scoring for the tree island PM, GE-E6, handles this kind of potential problem by using only the worst of	Language has been added to the intro paragraph to indicate what better and worse mean, and to highlight that they are sometimes of different magnitudes

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	<p>the two scores for extreme high water and extreme low water. I suggest that the “better” or “worse” characterizations should be generated in the same way, with the largest change in performance for extreme water levels brought forward to the table.</p>	
38	<p>Some of the major areas of uncertainty in the CERPA modeling effort are mentioned in disparate sections, but are not brought together or summarized in one place. I suggest addition of an uncertainty section that would briefly discuss the major uncertainty issues and their implications. Perhaps the two most important of these are the model assumptions about how well ASR will function and inclusion of the wastewater reuse features that we now know are unlikely to be implemented. We could point out at least the direction of change we would expect if these features do not function as well as is assumed in the modeling. A few lines on uncertainty in the Executive Summary would also be appropriate.</p>	See comment 18
39	<p>Marl marshes evaluation, page B59. On lines 13 and 14, the report states that the 80% POR inundation durations predicted for IRs 140 and 141 under CERPA are “the extreme wet end of marl prairie inundation periods...” This is not consistent with ET targets. The ET restoration targets are 46 to 65 percent POR inundation for IRs 140 and 141. The CERPA hydroperiods are 76 to 81 percent POR and would be expected to result in peat soil formation in these areas of current and historic marl soils (Browder et al. 1994; Davis 2003). For example, in the Ochopee marl marsh (IR 141), CERPA inundation durations (81 percent POR) are nearly identical to CERPA results for WCA-2B (83 percent POR), and nearly identical to 2000B3 results for southwest Shark River Slough (83 percent POR), both areas of deep peat soils. D13R inundation results for the Ochopee marl marsh (66 percent POR) were substantially drier than D13R results for WCA-2B (81 percent POR) and 95Base results for mid Shark River Slough (92 percent POR). The D13R inundation duration predictions for marl marshes flanking Shark River Slough (59 to 67 percent POR) were also longer than current restoration targets of 46 to 65 percent POR, but were within the range that would be expected to support marl forming processes. Thus, CERPA</p>	<p>Language has been added to the marl prairie detailed evaluation to indicate that given an 80% POR inundation, IRs 140 and 141 would be expected to develop marl-peat soils.</p>

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	results for marl areas flanking Shark River Slough represent a change in expected CERP performance that fundamentally changes the expected ecological outcome as compared to D13R predictions.	
	Patrick Pitts, FWS	
40	I was pleased to see in the latest version of the ICU the discussion of NSM targets being unsuitable for Florida Bay. The shift in strategy to establish salinity targets based on desired flora and faunal communities, using best supporting science including paleoecological information, is a move in the right direction. Unfortunately, because the analysis included in the current ICU document relies on NSM-based targets for the Southern Estuaries, the comparisons are of limited value.	Noted
41	For many of the performance measures, CERPA does not meet the target but is often close to the target. Additional analysis is required to determine if the differences between CERPA, 2050B3, and the target are statistically and ecologically significant. Without any indication of difference significance, it is difficult to justify the need for increases in surface flows, as has been indicated in the “Possible Plan Improvements” section for a number of performance measures. Where these cases appear in the document are identified below.	Noted
42	Page B72, lines 1-5. The statements are true for most of the embayments, but the reductions are small and may not be statistically significant. Perhaps more importantly, the reductions may not be biologically/ecologically significant. This should probably be stated in the document. Also, it is disturbing that there is very little difference between NSM, 2050B3, and CERPA for most of the embayments, indicating that existing conditions and future without project conditions are pretty much what we want and there is no need for CERP. Most experts working in this area would not agree with that premise.	Evaluations of monthly mean salinities demonstrate statistical significance between the NSM, 2000B3, 2050B3, and CERPA alternatives for Little Madiera Bay, Terrapin Bay, Garfield Bight, and Whipray Basin. The monthly mean data was only available in graphical format at the time the ICU evaluations were conducted, but will be included in future evaluations of the area. Ecological significance of a difference of a few ppt is not currently known, however, any movement toward lower salinities is

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		considered desirable in order to reach restoration targets.
43	Page B72, lines 7-9. If the differences between CERPA and NSM are not statistically or biologically significant, then this statement is not supported by the data.	See comment 42.
44	Page B72, lines 23-24. More justification for the statement “little or no change in water quality is anticipated from proposed water deliveries to Florida Bay” should be provided. Can the upstream wetlands remove enough nutrients from additional flows to yield no net decrease in water quality?	See comment 31
45	Page B73, lines 4-8. Again, it perhaps should be pointed out that the 3-4 ppt differences between CERPA and 2050B3 may not be statistically or ecologically significant.	See comment 42
46	Page B73, lines 10-12. The differences between CERPA and NSM 4.6.2 range between 0.5 and 2.0 ppt. These are very small differences and probably would not justify additional water delivery to the system, as the statement indicates.	See comment 42
47	Page B73, lines 18-23. More justification for the statement “little or no change in water quality is anticipated from proposed water deliveries to Florida Bay” should be provided. Can the upstream wetlands remove enough nutrients from additional flows to yield no net decrease in water quality?	See comment 31
48	Page B74, lines 21-23. I believe the wording here is confusing and perhaps in error. The CERP flows through the Miami River are less than 2000B3 or 2050B3, but the reduction in flow is not less.	Text has been revised
49	Page B75, lines 3-31. Because there are multiple targets, this performance measure will be difficult to evaluate and understand.	Noted

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50	<p>Page B76, Table 65. I am confused as to why this PM was not evaluated in the table according the target description (i.e., why were the wet/dry season targets ignored?). Perhaps more importantly, the NSM targets do not seem to agree with the targets described on page B75. For example, the 50th percentile for NSM 4.6.2 for Manatee Bay is 24.1, but the wet season/dry season target envelopes are 5-15 and 10-19 ppt, respectively, which is well below the NSM target. Also, the table shows that the target is attained with no action, which suggests that the target is too high.</p>	<p>The salinity targets outlined for this performance measure are evaluated using the 25th, 50th, and 75th quartiles for NSM salinity frequency. The reasoning behind this method, is that if an alternative achieves the quartile targets, it will also achieve the specific salinities stated in the target. Language has been added to the target section of this PM to clarify this relationship and evaluation protocol. For more detailed information, please refer to the documentation sheet for this PM posted on <a href="http://www.evergladesplan.org/pm/recover/eval_team_perf_measures.cfm">http://www.evergladesplan.org/pm/recover/eval_team_perf_measures.cfm</a></p>
51	<p>Page B77, lines 1-10. Perhaps include an explanation that links the desired salinity gradients described in the “Performance Measure” section with the required volumes defined in the “Target” section.</p>	<p>The target section of this evaluation has been revised to specify the desired salinity as well as the flows thought to be necessary to achieve that salinity.</p>
52	<p>Page B77, lines 32-34. It may be called to question whether or not the existing grass beds depend on the current level of freshwater discharge. Other physical parameters may be more important than freshwater in maintaining these beds (e.g., sediment depth, circulation, etc.).</p>	<p>The link between salinity regimes and seagrass communities is well established and is documented in the RECOVER PM documentation sheet for North Biscayne Bay. It is the salinity-flow relationship that CERP hopes to affect in order to maintain and improve seagrass communities in North Biscayne Bay.</p>
53	<p>Page B78, lines 17-18. Additional documentation may be required to justify the need for additional flow for this seagrass-based target.</p>	<p>Documentation of the relationship between sea grass communities and salinity can be found in the performance measure documentation sheet</p>

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		for this PM
54	Page B78, lines 27-34. Perhaps include an explanation that links the desired salinity gradients described in the “Performance Measure” section with the required volumes defined in the “Target” section.	The target section of this evaluation has been revised to specify the desired salinity as well as the flows thought to be necessary to achieve that salinity.
55	Page B79, Table 68. How does the monthly target relate to the wet/dry season target?	The target text has been clarified to demonstrate the relationship between the monthly flow targets and the total wet-dry season targets.
56	Page B80, Table 69. How does the monthly target relate to the wet/dry season target?	The target text has been clarified to demonstrate the relationship between the monthly flow targets and the total wet-dry season targets.
	Kim Jacobs, SFWMD	
57	Second paragraph. The Restudy and the feasibility report are not discussed correctly. The Restudy was a process; the Final Integrated Feasibility Report and Programmatic Environmental Impact Statement is the final report that resulted from the process. I suggest making the following changes to the paragraph: The CERP was last simulated in 1999 during the Central and Southern Florida Project Comprehensive Review Study (Restudy) with the best modeling tools and data available at that time. Since then, modeling tools and our understanding of the ecosystem have improved. The purpose of the ICU was to re-simulate the CERP, using components as defined in the Restudy’s Final Integrated Feasibility Study and Programmatic Environmental Impact Statement of April, 1999 (RestudyUSACE and SFWMD 1999), with updated models and input data. The ICU identifies three general categories of updated information that were	Text has been revised

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	<p>incorporated since the 1999 Restudy: Remember to include the Yellow Book reference in a reference section somewhere in the document or put it in a footnote. The reference is as follows: USACE and SFWMD. 1999. Central and Southern Florida Project Comprehensive Review Study Final Integrated Feasibility Report and Programmatic Environmental Impact Statement. United States Army Corps of Engineers, Jacksonville District, Jacksonville, FL, and South Florida Water Management District, West Palm Beach, FL.</p>	
58	<p>Page 3, first paragraph, last sentence. Reword the sentence as follows” Other factors that CERP was not designed to correct, such as (e.g., proliferation of invasive exotic species,) also have an effect on the ecosystem that CERP was not designed to correct.</p>	Text has been revised
59	<p>Need a citation for the Programmatic Regulations for CERP (DOD 2003). The reference is as follows: DOD. 2003. Programmatic Regulations for the Comprehensive Everglades Restoration Plan; Final Rule. Department of Defense, 33 CFR Part 385, Federal Register, November 12, 2003.</p>	Text has been revised
60	<p>Lines 3 and 4 on page 8 – Need to cite the document mentioned and provide the reference information.</p>	Text has been revised
61	<p>Page 11. First full paragraph. Table 3 in Appendix B (page B3) does not contain a ‘no flow’ criteria, so how can CERPA have achieved this target better than the future without condition.</p>	Text has been revised to read “To achieve the restoration goals for the St. Lucie Estuary and ensure freshwater inflows, periods of low flow from Lake Okeechobee should be minimized.”
62	<p>Page B4. The discussion of St. Lucie Estuary water quality uses too many acronyms that are not defined. I suggest not using acronyms for Northern Estuaries, St. Lucie Estuary, water quality, and million tons (?) (MT). Also, stormwater treatment areas should not be capitalized and the apostrophe needs to be removed.</p>	Text has been revised

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63	Page B4. Line 25. Cite the 2004 Everglades Consolidated Report (SFWMD 2004) and provide a reference.	Text has been revised
64	Page B5. Lines 17 and 18 and Table 5. Why is the target for “Number of times the 7-day moving average flow = 0 cfs” listed as NA. The text in lines 17-18 states that they should be eliminated; therefore, the target in the table should be 0.	While the NE sub-team of the ET is currently proposing a target of no occurrences for 0cfs flows, this target has not been formally approved by the ET at this time. Updates to PMs and their targets will be incorporated in the next periodic CERP update.
65	Page B6, Lines 11 and 12. Reword the sentence as follows: The future without using rain-driven operations (50B3S4) has a slightly number more occurrences of each event when compared to 2050B3.	Text has been revised
66	Page B6. As with the St. Lucie Estuary water quality performance measure, the discussion of Lake Worth Lagoon water quality uses too many acronyms that are not defined. I suggest not using acronyms for Northern Estuaries, St. Lucie Estuary, water quality, and million tons (?) (MT). Also, stormwater treatment areas should not be capitalized and the apostrophe needs to be removed.	Text has been revised
Sue Sofia, Corps		
67	When discussing the “2050 future without CERP condition”, the phrase should be written in its entirety throughout the document to avoid confusion. Also, on page 30, for example, it’s written “with-project” and “with-out project”, i.e., with a hyphen. Be consistent with these terms.	Text has been revised
68	Executive Summary, 6th paragraph, last sentence: Should define CERPA before discussing it.	Text has been revised
69	Page 9, Section 5.1, 1st sentence of 1st paragraph: insert “ecosystem” after “Florida”.	Text has been revised

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70	Page 9, Section 5.1, entire section: use “stages” instead of “elevations”.	Text has been revised
71	Page 9, Section 5.1, 2nd paragraph, 3rd sentence: insert a comma between “events” and “some”.	Text has been revised
72	Page 10, Section 5.2, 1st paragraph, 2nd sentence: replace “pulsed releases” with “discharges”. There are other high-volume regulatory discharges that are not pulse releases.	Text has been revised
73	Page 10, Section 5.2, 1st paragraph, last sentence: insert a comma between “St. Lucie” and “one”.	Text has been revised
74	Page 10, Section 5.2, 2nd paragraph, last sentence: This sentence is disjointed and does not have a clear meaning – please rewrite to clarify.	Text has been revised
75	Page 12, Section 5.4, 1st paragraph, 1st sentence: Operation of the S-79 structure doesn’t actually “allow” the high-volume discharges. The discharges are a result of the lake stage and the regulation schedule. Suggest changing first sentence to read, “The estuarine portion of the Caloosahatchee Estuary has been impacted by high-volume discharges from Lake Okeechobee.”	Text has been revised
76	Page 12, Section 5.4, 3rd paragraph: Delete 2nd comma, and insert a comma after “Okeechobee”.	Text has been revised
77	Page 32, Section 6.0, 1st paragraph, 3rd sentence: Suggest rewriting to read, “Refer to that section of the report for more detailed information about a particular area or performance evaluation.”	Text has been revised
78	Page 32, Section 6.0, 1st paragraph, 6th sentence: Remove both commas.	Text has been revised

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79	Page 32, 1st paragraph, last sentence: Rewrite to read, “Restudy results from the D13R evaluations for each area are also presented for comparison.”	Text has been revised
80	Page 36, 1st bullet: Does “extended” mean that the hydroperiods are too long and that they are the new shortfall? Please rewrite to clarify.	Text has been revised
81	Page A2, item #6: Change “Myakka” to “Mayaca”, the correct spelling.	Text has been revised
82	Page B82, Section 5.2, 1st paragraph, 1st sentence: The meaning of this incomplete sentence is unclear. Please rewrite to clarify.	Text has been revised
83	Page B82, Section 5.2, 3rd paragraph, “Target” sentence: Rewrite after “and” to read, “...all the water shortages are Phase 1 severity.”	Text has been revised
84	Page C1, Section 1.0, 2nd paragraph, 2nd sentence: Remove the comma.	Text has been revised
85	Page C5, 2nd paragraph, last sentence: Change “us” to “use”.	Text has been revised
Linda McCarthy, FDACS		
86	It seems like the report should include the presentation of a more clear set of options the "decision makers" mentioned in the executive summary could consider than those mentioned on pg 37. We learned a lot about what's possible to do during the SPAT exercise. I'm not recommending explaining (the non-controversial) SPAT, but I think there are recommendations that were learned during that exercise that could address some of the shortfalls identified in this report.	Language has been added to the conclusions section to summarize the importance of optimizing operations to improve Plan performance, which was one of the key learnings from the SPAT exercises.

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87	<p>I have a little bit of an issue with some of the phrasing. In the second-to-last paragraph of the executive summary: "Generally, the CERPA modeling scenario performed better than the 2050 future without CERP, but still fell short of meeting restoration targets in several areas". I don't think anybody thought the new version of the model would "fix" the Restudy's restoration target shortfalls, which is sort of what this sentence implies. Maybe delete "still" and add "as did CERP" - or something like that. Or, use the sentence in the last paragraph on pg 37 - "The conclusion of the ICU is that CERPA generally meets the goals and purposes of the Plan although further improvements are desirable".</p>	Text has been revised
88	<p>The additional C-43 basin water supply shortfall was not included in the bulleted list of new or increased performance shortfalls on pg 35. Neither was the worsened southern Dade flood control performance. Both of those should be added.</p>	Language has been added to the Conclusions section of the ICU report to discuss areas with potential savings clause issues.
89	<p>One of the things I remember that was going to be documented in the ICU report was the Restudy projects that were not modeled in the final CERP run in the same way that they were described in the yellowbook. How were they modeled in CERP - the same way as the Restudy or were they "fixed" in the new version of the model? I couldn't find any mention of these in Section 3.0</p>	Language has been added to Section 3 to reference Appendix D, which outlines modeling assumptions for CERPA and highlights the specific CERP projects that are now modeled by the SFWMM, but were not modeled in the Restudy.
Vic Engel, ENP		
90	<p>In general, the text should be shortened where there is no new information being presented. For example, the constant repetition of the first paragraph in each GE section describing the target is unnecessary. This material should be moved forward into an "introductory" or "overview" section with specific text identifying to which performance measures it should be applied. More importantly, this paragraph should also be revised, since it contains information that is misleading. For example, the paragraph states that the years 1994, 1995, 1998, and 1999 are associated with <i>extended</i> hydroperiods in IR 121. However,</p>	<p>With regard to the repetition of target language text throughout the GE, the ICU Report writing team established the document format to ensure that each performance measure target and evaluation findings are clearly stated. Each area evaluated within the ICU report follows this format.</p>

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<p>an analysis of the observed hydrograph in this region (derived from stages at 3AS and using the average elevation of IR 121) shows that this area has been continually inundated since mid-1992 to 2005 with the minor exception of 2 weeks in 2001. This means essentially that <i>all</i> years between 1993 and 2005 have exhibited annual hydroperiods of 365 days (excluding 2001 with a ~351 day hydroperiod). This also means that the percent period of inundation (%POR) since 1993 in IR 121 has been 98%. Since the ridge and slough in this area continues to be regarded as a good representation of this type of system, it does not seem warranted to state in the ICU paragraph that the 94% inundation between 1981 and 2000 in the reference area is an example of an <i>extended</i> inundation period. The fact that a 365 day annual hydroperiod is exhibited so frequently in this region also does not justify the statement that the particular years 1994, 1995, 1998, and 1999 should be associated with extended (i.e. extreme) hydroperiods.</p> <p>The 94% inundation in IR 121 between 1981 and 2000 is often described as an extended duration of inundation because of the apparent damage to tree islands during 1994, 1995, 1998, and 1999. However, the metric of “inundation” as a stand- alone measure has never been identified as a factor in tree island harm. Neither the FWS tree island PM nor the ENP tree island PM use inundation (as %P.O.R.) as a factor in their evaluation methodology. Both PMs recognize that it is depth <i>plus</i> duration that causes impacts to tree islands. It is therefore inconsistent to cite the apparent damage to tree islands in IR 121 during 1994, 1995, 1998, and 1999 as a justification for labeling the inundation periods (as %POR) in IR 121 as <i>extended</i>. As stated above, many years other than these four exhibit 365 day, continuous hydroperiods. If inundation alone was responsible for tree island damage, then one can assume that damage would have been observed during all years with 365 day hydroperiods. This does not appear to be the case. In fact, the case for high water damage to tree islands during the years 1998 and 1999 would be much stronger if some published document (white paper or otherwise) could be cited. The only apparent reference is a</p>	<p>With regard to text referencing IR121, the text has been revised to reflect that IR121 hydroperiods are being considered an empirically based threshold that should not be exceeded in order to maintain tree island health in the WCAs. References to <i>extreme</i> and <i>extended</i> hydroperiods have been removed as suggested.</p> <p>The RECOVER tree island performance measure used for ICU evaluations currently evaluates the number of weeks (duration) when water levels are above 2ft or less than - 1ft (depth). Any proposed changes to this performance measure are outside the scope of the ICU report and should be pursued through the PM development and approval processes established by the RECOVER Evaluation Team.</p> <p>A reference to high water impacts on tree islands in the WCAs has been added to the ICU report (Guerra 1996). References to personal communications have been removed.</p> <p>IR 121 was used by the RECOVER evaluators to give context to differencing NSM targets, and was not used to replace existing approved Greater Everglades targets for inundation or high/low water events. References to IR121 have been revised to reflect that it is an</p>
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	<p>personal citation from one of the authors of the document. No data or description of the type of damage observed is provided. Visual inspection of the 3AS hydrograph in IR 121 shows that water levels in 1999 did reach the maximum depths observed in 1994-1995, albeit for somewhat shorter intervals. However, high water levels in 1998 were <i>not</i> remarkably different from other years. In fact they are on the low end of values occurring between 1993 and 2005. It is therefore difficult to believe that the impacts of 1998 water levels were similar to impacts observed during 1994, 1995, and 1999.</p> <p>It is recommended that this paragraph be removed from the sections of the report dealing with inundation patterns and targets.</p>	<p>empirically based value used for additional information and references to <i>extreme</i> or <i>extended</i> hydroperiods have been removed. The sentences referring to IR121 have not been removed from the ICU report.</p>
91	<p>It is also critical that more details be provided regarding the justification and use of the 1981-2000 hydrologic conditions in IR 121 as a reference value for high water levels and inundation periods considered too wet for ridge and slough and tree islands. These reference area conditions are used to evaluate nearly all the Greater Everglades PMs. Yet there is no material in the Introductory sections discussing the use, justification, or implications of using this area as a reference for damaging high water in the ridge and slough and tree islands. For example, this material should include documentation of the type of damage observed on tree islands in IR121 during 1994, 1995, 1998, and 1999. Is this damage a decrease in diversity? Are the observations from the same islands used to in the formulation of GE-E6 (the FWS PM)? Was the damage permanent? and on what scale? Which species were affected? And how does the metric of inundation as %POR reflect damage that apparently occurs on an annual time scale? <b>Until information such as this is provided it is clear that there is far too much reliance on the use of the 1981-2000 hydrologic conditions in IR 121 as a reference point to evaluate damaging hydroperiods and the duration of high water events.</b> It should also be noted that the 1981-2000 conditions in IR 121 are used in the ICU as an proxy for water levels and durations that <i>exceed</i> the tolerances of ridge and slough and tree islands. Yet this area is also cited (and has been for some time) as an example of a well-preserved and functioning ridge</p>	<p>The period from 1981-2000 was chosen for reference area IR121 to correspond to RECOVER performance measure GE-E6. HI and LO values calculated for GE-E6 are calculated using only model output for the years 1981-2000. This subset of model years is necessary to make the performance measure conform to the same rainfall distribution as that used in the statistical analysis of tree island vegetation and hydrologic data (i.e., the rainfall years used in the calibration and verification simulations for SFWMM 5.4). Information to this effect as well as references for observed tree island damage and reduction in spatial extent are included in the GE-E6 performance measure documentation sheet.</p> <p>With regard to the use of IR121 versus IR124 as a reference area, IR121 was chosen as a reference area to demonstrate the threshold</p>

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	<p>and slough system. These two statements are mutually exclusive, and the inconsistencies should be resolved in detail somewhere in the document.</p> <p>A better example of depth-duration conditions that exceed the tolerances of ridge and slough and tree island communities would be derived from IR 124 (southern 3A) in the 2000B3 existing condition. This area is held almost universally as an area with damaging high water that impacts tree islands. The justification for switching the high water reference area to IR 121 and characterizing it now as the example of extreme conditions does not hold nearly as much consensus. If IR124 were used as a reference point, then many of the conclusions regarding the detrimental impacts CERPA on extended hydroperiods and high water events would change dramatically. It is recommended that this area be adopted as a reference point for evaluating damaging high water conditions generated by CERP.</p>	<p>water depths and durations that could still be considered to maintain tree islands in the WCA. Text in the target statements of the performance measures GE-E2, GE-E3, and GE-E6 has been revised to reflect IR121 is to be considered a threshold for high water conditions and inundation duration which should not be exceeded. Again, these IR121 reference area values are being used as additional information in the evaluations and do not replace the accepted targets for these performance measures.</p>
92	<p>Pg. 108, line 1. The phrase “falls slightly below the target envelope for the Shark River Slough Landscape” should be replaced with “falls between the two NSM values for these Indicator Regions.”</p>	<p>Text has been revised</p>
93	<p>Pg 108 lines 19 and 20. The two sentences: “The average duration of events falls progressively outside (above) the target envelope for indicator regions 130 and 129, respectively” and “The percent period of record falls slightly above the targets for the same IRs” should be dropped because they are inaccurate. This information is covered in the last sentence in this paragraph which states the trend correctly: “Under CERPA the average duration of inundation falls between the two NSM scenarios” and it should be changed slightly to read: “Under CERPA the average duration of inundation and the percent period of record generally fall between the two NSM scenarios. An exception occurs in the percent period of record for IRs 130 and 131 which are from 1 to 4% higher than the NSM values.” (not up on PM viewer)</p> <p>Also, in this paragraph, what is the significance of the statement regarding the</p>	<p>The term ‘target envelope’ in this context refers to the box-and-whisker plots used to determine ecological significance of deviation from NSM targets. The language in this section was revised to make this relationship more clear.</p> <p>The statement regarding seepage water has been removed from the report as recommended.</p>

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	capture of seepage water? In the interest of space and length, it is recommended this statement be dropped since it doesn't have any ecological relevance.	
94	Pg 108 line 22. The phrase “falls slightly below” should be changed to “falls well below”. This sentence is referring to differences in inundation from 6 to 13% and from 60-500 weeks average duration.	Text has been revised
95	Pg 109, line 3: The sentence “changes in operations schedules should be investigated to determine if it is possible to lessen the duration of inundation for these regions” should be dropped. The purpose of the ICU report is not to make recommendations. Also, given that the inundation percent period of record for these indicator regions (IRs 129 and 130) are 98 and 97%, respectively and that inundation in this region is expected to be longer than other parts of the ridge and slough system, there is no justification for the suggestion to lower these values. As is described above, IR 121 has been inundated almost continuously over the last 12 years (98%), and for 94% of the full simulation period. The 98% value indicates the CERPA values for 129 and 130 are reasonable, and it is expected to be greater than the 94% over the full simulation period because this was historically an area that exhibited deeper water and longer hydroperiods than other parts of the ridge and slough system. Both the NSM simulations and some historical accounts indicate this is so	Text has been revised
96	Pg 109 line 19 and pg 110 lines 13-15: For the reasons stated in the preceding paragraph, the sentences “For IR 129 the NSM number of high events is considered too high based on best professional judgment. New targets should be set for IR 129” should be dropped. The issue of NSM targets is not restricted to IR 129. Best professional judgment would suggest that water levels in the NSM are too low throughout the system	The statement that NSM target for number of high events is considered too high based on best professional judgment has been accepted and stated by the Greater Everglades sub-team based on consultation with ENP scientists. Any changes to accepted performance targets are outside the scope of the ICU report and should be pursued using the PM acceptance processes established by the RECOVER Evaluation Team. Language has been added to the report that these targets will be reviewed

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		by the Greater Everglades sub-team.
97	Pg 111 line 12. This paragraph should read as follows: CERPA does a fairly good job of approaching NSM targets for the number of low water events. The number of high water weeks in CERPA is between the values predicted in the two NSM simulations. The remainder of the paragraph should be dropped, particularly the sentence: “The 40% high water value for CERPA in IR 129 exceeds the reference value of 17% high water from IR 121, conditions under which tree island damage from high water is known to occur”. Again, the use of IR 121 as a target for ENP is not warranted at this time.	Language related to IR121 was removed.
98	Pg 116: line 12: “increase” should be changed to “decrease”. CERPA decreases the number of extreme low events from the 2050B3 condition in the marl prairie regions.	Text has been revised
99	Pg 116: line 12: The last sentence in this paragraph does not make sense. It should be reworded or dropped. These sort of vague, unreferenced statements about complex processes are inappropriate and simply create confusion for the reader. For example, what is meant by the statement that “extended periods of high water may preclude sediment stabilization...promoting increased nutrient availability?” Nutrient dynamics in wetland areas are controlled by many factors, including oxygen concentrations, substrate type, etc. Please be more specific about the causal mechanisms you are referring to in this statement. The same comment applies to the statement about fire effects on nutrient dynamics. It should be noted that this paragraph concludes that both extreme high water and extreme low water result in increased nutrient availability	Both mechanisms discussed in this statement are well documented. Fire (oxidation) often leads to large nutrient pulses upon rewetting. Additionally, changes in vegetation communities may destabilize sediments potentially increasing sediment nutrient fluxes. Language in this section has been modified to make the linkages more clear, and references to relevant literature have been added.
100	Based on the documentation provided by Tim Pinion on Sept. 15, 2005, it is unfortunate that the only reference provided for tree island damage in IR 121 is a personal communication. This represents the best available scientific information on this region, and it is used to evaluate nearly all the regions in the greater everglades, including ENP. Are there no field notes, observation times, lists of species exhibiting mortality, the number of tree islands visited, etc. from this IR? If the Guerra (1996) observations do cover IR 121, this should be	As suggested, references to personal communication have been removed from the ICU report.  While reference area IR121 is considered in evaluations of the WCAs, there has been no use of IR121 for the evaluation of areas within

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	<p>referenced in Table 2, though this reference won't cover 1989 or 1999. The issue of tree islands, as everyone knows, is extremely important and warrants as complete as possible documentation. Without this information there remains an inconsistency between the data that is presented, and the use of IR 121 as a reference area that exceeds suitability for tree islands and ridge and slough. For example, Table 3 in Tim's document shows (and as mentioned in the text) that tree island aerial extent in IR 121 has remained relatively stable since the 1970s. This is a long period relative to the time scale of impacts to tree islands (1-2 yrs based on observational data), and would imply that the water depth-durations in this region may actually sustain tree islands over the longer term.</p>	<p>ENP (per previous comments).</p> <p>It is the ability of IR121 to remain an example of relatively intact ridge and slough habitat (e.g. areal extent of tree islands remaining stable since 1970) that lends to its use as an empirically based threshold for hydroperiods, which should not be exceeded in order to maintain ridge and slough characteristics. Text referring to IR121 has been revised as suggested to remove reference to <i>extended</i> or <i>extreme</i> hydroperiods.</p>
101	<p>I think the description of IR 121 as a reference area Tim provided should include a more explicit description of the hydrologic data from this region. A discussion on time scales of change in the landscape and uncertainty in restoration targets and should also accompany this text. For example, in Figure 1 below, the hydrographs from central and southern 3A (IRs 121 and 124) show generally very subtle differences in water depths in these regions since 1992. However, IR 124 is considered almost universally to exhibit conditions that harm tree islands, while IR 121 in the ICU is considered to be just at the threshold of suitability. It is also worth noting that water levels in 1998 are significantly different from the years 1994, 1995, and 1999, and resemble more the other years since 1992. Yet, this year is lumped with 94, 95, and 99 as a period resulting in mortality. These observations, along with other studies and observations, suggest that hydrologic conditions alone are insufficient to explain trends in tree island extent and change over time. Climate, fire and peat oxidation caused by low water levels may represent other causal factors. This is not mentioned anywhere in the ICU.</p>	<p>The use of IR121 as a reference area was determined by evaluators and reviewed by the Greater Everglades sub-team. Any changes to evaluation protocols or performance measure targets accepted by the sub-teams are outside the scope of the ICU report and should be pursued using the PM development processes established by the RECOVER Evaluation Team. Additionally, it is important to note that IR121 was used to give context to differing NSM values, and was not intended to replace existing accepted targets.</p>
102	<p>I'm also unclear as to how the document addresses the issue I raised on using inundation in the ridge and slough versus depth plus duration as a metric for evaluating hydrologic conditions suitable for tree islands. Hydrographs based on</p>	<p>See response to comment 90. As previously stated, any proposed revisions to currently accepted performance measure targets or</p>

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	<p>gage data and IR average elevations show that central and southern 3A have been inundated almost continuously since mid-1992 (Figure 1, below). Significant damage to tree islands should have occurred during this time if a long hydroperiod (in and of itself) results in harm. The observational record also shows that southern 3A dried out regularly during the period from the early 1980s to 1995, corresponding to the period showing the largest decreases in tree island extent. It is therefore difficult to conclude that extended periods of inundation alone are causing tree island loss. It is also inaccurate to state that 1994, 1995, 1998, and 1999 are associated with extended hydroperiods, since nearly all years since 1992 have shown annual hydroperiods of 365 days. I recommend taking out or modifying the statement in the target description for GE-E2 that states “these years are associated with extended hydroperiods”.</p>	<p>evaluation protocols is outside the scope of the ICU and should be pursued using the PM development processes established by the RECOVER Evaluation Team.</p>
103	<p>It should also be noted that Figure 1 shows that summary statistics of hydrologic conditions in IR 121 from 1981 to 2000 encompass two very distinct periods of water depth and duration. The tree island area change analysis and other observational data show that impacts to tree islands can occur at time scales much smaller than these individual periods. Thus, the use of summary statistics from 1981 to 2000 to determine thresholds of tree island suitability may obscure causal factors and may lower the accuracy of the plan evaluations.</p>	<p>As previously stated, any proposed revisions to currently accepted performance measure targets or evaluation protocols is outside the scope of the ICU and should be pursued using the PM development processes established by the RECOVER Evaluation Team.</p>
	Chris Brown, Corps	
104	<p>In my opinion the original CERP presented opportunities to optimize the system and actually reduce the total # of wells required by slightly extending their average operating length per year. This approach overall would lead to slightly less total benefits but potentially large cost savings.</p> <p>In reviewing the ICU, the ASR scheme seems even further from optimum. I strongly believe that changes in ASR "rules" need to be considered for the modeling as well as an evaluation of smaller number of wells operating longer per year. For the Site 1 ICU run, 15 to 20 ASR wells could provide the same benefit (possibly more) than the 30 wells used sparingly in the ICU run. At Site</p>	<p>The refinement of CERPA performance including the optimization of ASR operations will be addressed in a follow up effort to the ICU.</p>

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	1, only 16.85% of the recharged water is recovered in the 36 year period of record according to the ICU run. If that is the best we can do, we need to seriously look at the need for ASR at all at this site. Perhaps another alternative technology would be better here. My guess is that we can do far better at both Lake O and Site 1 but consideration for less wells, operating more efficiently, should be a strong focus for the future.	
	E Kearns, ENP	
105	The CERP goals listed for FL Bay are solely based on the frequency at which target salinities are met in the wet and dry seasons. That’s fine, but the performance measures that purport to quantify this frequency do not do so. The frequency distributions for the salinities in the embayments listed are unlikely to be Gaussian (normal) in shape. <b>Using statistics (percentiles etc.) that are based upon the existence of a normal distribution with a single central peak simply are not applicable for measuring the frequency at which targets are met.</b> The PMs should simply be based on frequency distributions perhaps?	Comment noted. Details regarding the statistical distributions and evaluation methodology used for Florida Bay can be found in the performance measure documentation sheet for SE-E2 Frequency of Low Salinities and High Salinities in Florida Bay Coastal Embayments.
106	The precision of the salinities noted need not be quoted to the tenths (one part in ten thousand ?) when the range is about one part in one hundred. (this applies to the whole document)	Comment noted.
107	Miami River/Bisc Bay: The stated CERP goal is to maintain an estuarine salinity and a persistent salinity gradient. That’s a bit vague (and can be accomplished as stated with very little water). The two flow targets given don’t apparently relate to the desired salinity conditions, and span the range from 126 Kaf/yr on the high side (3Kaf/wk for 42 weeks) to 32 Kaf/yr on the low side (50 cfs for 329 days). Since the vague goal can probably be accomplished with the lower limit, this might be too loose a target, or the goal needs to be firmed up	Comment noted. The RECOVER Southern Estuaries sub-team will continue to refine and revise the performance measure to better evaluate project and Plan alternatives; however, these changes are outside the scope of the ICU and should be conducted following the performance measure approval process.
108	Manatee Bay/Barnes Sound: The fact that almost <i>all</i> the alternatives’ salinities – including NSM -- are within 1ppt or so indicates to me that <i>something</i> about the entire physical system isn’t being well resolved here. <b>This means that the salinities in the area are totally insensitive to the water management practices upstream?</b>	Comment noted. The RECOVER Southern Estuaries sub-team will continue to refine and revise the performance measure to better evaluate project and Plan alternatives however, these changes are outside the scope of the ICU

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		and should be conducted following the performance measure approval process.
109	South Biscayne Bay: I know the flow target was based on some salinity calculations, but they should be referenced here.	Language was added to performance measure SE-E5 (South Biscayne Bay) to document the desired salinities, their ecological basis, and the necessary flows to achieve them.
110	North Bisc Bay: It shouldn't be at all surprising that 2000B3 and 2050B3 (the 'future without') meet the stated goals of "maintaining current levels of freshwater discharge", should it?	Comment noted
111	Central Biscayne Bay: The goals and performance measures are not at all specific about the desired salinities. Since the volume targeted is far in excess of what is discharging from S-22 and G-93 now, the justification for these increased flows should be included	Language was added to performance measure SE-E7 (Central Biscayne Bay) to document the desired salinities, their ecological basis, and the necessary flows to achieve them.
	Dave Hallac, ENP	
112	<p>Background comments on the methodology: Overall, we seem to have at least two different approaches to setting restoration goals (and the resulting PM's). For Biscayne Bay, defining a specific canal flow regime has been the general approach, with little connection to biology other than a generic assertion that estuarine = restoration. There is the general recognition that hypersalinity and canal discharge schedules have not been beneficial and that the NSM is not a valid tool for reconstruction of coastal hydro patterns. CERP goals, as such, are based on a desired condition, not a predrainage condition; although the goals share some of those characteristics (i.e. a more natural coastal hydro pattern is desired). Some targets are better justified in terms of ecological improvement than others. Most, at best, are based on best professional judgment on what a beneficial surface water budget should be. Predrainage conditions are part of goal-setting, but for practical reasons, are secondary considerations.</p> <p>For Florida Bay, targets were developed during and after the Restudy in a similar manner, although the justifications were more detailed, and instead of canal</p>	<p>RECOVER recognizes and acknowledges the value of creating non-model based, scientifically defensible targets for CERP system-wide performance measures. At the time the ICU was conducted, RECOVER had just begun investigating alternate targets to those predicted using the NSM.</p> <p>Unfortunately, there was not sufficient time to develop and accept a new set of targets for the southern estuaries or other regions of the South Florida ecosystem prior to completion of the ICU. Because the ICU is just one of the periodic CERP updates called for by the CERP programmatic regulations, it was not feasible to delay it to include all in-progress updates. There will be changes to predictive tools as</p>

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	<p>discharge, salinity ranges, SAV quantity and quality, and water quality conditions were derived from a knowledge based developed over 10+ years of study and focused on these issues in FI Bay. As such, these PM's and their targets are also 'desired condition' goals that have had a general interagency consensus (at least thus far). They currently stand as the PM's for the Florida Bay Feasibility Study and while they could use some improvement, provide a well-considered and documented set of conditions that would further restoration of the coast and Bay.</p> <p>A second approach has been taken in Florida Bay by RECOVER in the last two years or so, which employs simulation modeling to determine what the ecology of the Bay needs. An extension of the regional hydrology model, NSM, has been employed to define fresh water stages on the coast that will restore the flora and fauna of Florida Bay.</p> <p>The RECOVER approach for evaluating ICU model runs in this document provides a set of targets that are not defensible. Even if they coincided with targets derived from critical habitat needs at this point, changes in NSM model variables/code would shift the salinity targets. While more information on the ecology of an indicator could do the same, at least a means of validation exists and a useful measure of uncertainty can be derived. These do not exist for the NSM modeling approach currently used. The ICU report would have better credibility if RECOVER had used the ecologically-based salinity PM's, even if the assessment on CERP progress was not positive. The USFWS (David Hallac and Patrick Pitts) provided additional rationale on setting salinity targets using the paleoecological record for the bays. Hopefully this will provide the additional justification needed for RECOVER to improve the ICU/CERP assessment process for the southern estuaries.</p>	<p>well as performance measures that are in-progress now, but will be completed before the next CERP update. Continued performance measure development and refinement of current performance measures will continue through RECOVER's performance measure approval process and will be documented and used in the next periodic CERP update. Additionally, language has been added to the report to document that NSM targets are currently under review and that new targets will be established for the southern estuaries using biological and paleosalinity data.</p>
113	<p>General Comments for FI Bay section: The ICU report should try to stay with generalities, since a detailed evaluation of the potential effects of CERP on Florida Bay is premature at this point. During</p>	<p>RECOVER recognizes the work being conducted through the FBFKFS and will incorporate new information and predictive</p>

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	<p>the Restudy, it was recognized that information, data, and tools to apply them were lacking, and thus the Florida Bay – Florida Keys Feasibility Study (FBFKFS) was authorized. The FBFKFS process includes development and application of the necessary hydrodynamic models, coastal hydrologic models, and physical and biological performance measures needed to adequately evaluate CERP effects on lower Taylor Slough and on Florida Bay. At present, results of the evaluations of the Study should be available by 2008. Until then, an assessment of the potential effects of CERP on lower Taylor Slough and Florida Bay should be confined to descriptions of how the overall water budget to these areas are expected to change. The trend is important, for it reflects overall water delivery to the coast, important to improving estuarine habitat conditions. Any further attempt to detail effects at this stage of CERP has high uncertainty and without any effort to validate model runs and targets, could be limited in utility. The effort to analyze beyond sound methodologies weakens the significance of the (sic)</p>	<p>tools from the FS as they become available. Until such time as this information is made available, RECOVER performance measures are based on flow and stage calculations for the bay. The scientific for these flow and stage targets are presented in the individual performance measure documentation sheets, and some language has been added to the ICU report to document the correlation between salinity and biological factors.</p>
114	<p>The lack of biological PM’s that can be legitimately coupled to physical PM’s in the ICU is problematic. Efforts under way in the FBFKFS should eventually address potential biological responses, at least in part.</p>	<p>The RECOVER Evaluation and Assessment teams will continue to refine and revise performance measures for this region, including the development of biological performance measures however, these changes are outside the scope of the ICU and should be conducted following the performance measure approval process. Efforts under way for the FBFKFS will be incorporated, as appropriate, when they are made available.</p>
115	<p>The water quality section is in need of revision (or removal)</p>	<p>The water quality language in the ICU report was revised as suggested.</p>