Letter Regarding the SFWMD Review of the DEA for Temporary Deviation from G-3273 Constraint

- Letter from the South Florida Water Management District (SFWMD) to the United States Army Corps of Engineers (USACE) dated November 19, 2010 in response the USACE's request for a review of the *Draft Environmental Assessment Temporary Deviation from IOP Table ES-1; S-333: G-3273 Constraint Miami-Dade County, Florida* document

- Attachment 1 to the above mentioned letter containing SFWMD detailed comments on the DEA

- *Draft Environmental Assessment Temporary Deviation from IOP Table ES-1; S-333: G-3273 Constraint Miami-Dade County, Florida* available at the following web address: http://www.saj.usace.army.mil/Divisions/Planning/Branches/Environmental/DOCS/OnLine/Dade/G-3273dev_draftFinal6.pdf

Provided November 30, 2010

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

November 19, 2010

Lauren P. Milligan, Environmental Manager
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, MS 47
Tallahassee, FL 32399-3000

Dear Ms. Milligan:

Subject: Department of the Army, Jacksonville District Corps of Engineers Draft Environmental Assessment for Temporary Deviation from IOP Table ES-1; S-333: G-3273 Constraint, Miami-Dade County, FL SAI No: FL201009295486C

In response to your request, the South Florida Water Management District (SFWMD) has reviewed the Draft Environmental Assessment (DEA) for temporary deviation from the G-3273 constraint. The SFWMD supports the concept of alternative criteria for G-3273; however, there are deficiencies in the documentation that should be addressed prior to proceeding with this temporary deviation. Major concerns are highlighted below and detailed comments are attached.

Operating Criteria: At the request of the US Army Corps of Engineers (Corps), SFWMD staff has provided detailed operational input to develop a robust test of short-term changes to operating criteria. However, the proposed temporary deviation does not provide adequate information about the goals, objectives, methodology or monitoring of the performance of the proposed operational modifications. The SFWMD cannot recommend moving forward until these substantive operational issues are addressed.

Water Quality: The SFWMD questions the basis for the Corps' Finding of No Significant Impact that "The proposed action will not adversely affect water quality." No analysis of potential water quality impacts has been submitted in the DEA to support this finding. The SFWMD is concerned that the proposed action may adversely affect water quality. It may increase the flow-weighted mean of total phosphorus (TP) concentrations by moving more water to S-333, which has higher TP concentrations than current flows through the S-12s.

Everglades Settlement Agreement: Environmental Assessment Section 4.20, "Compliance with Environmental Requirements", does not mention Appendix A of the Everglades Settlement Agreement. The Settlement Agreement established long-term phosphorus concentration limits for Shark River Slough based on the magnitude of flow entering Everglades National Park through the S-12s, S-333 and other structures. The proposed temporary deviation will facilitate more flow into Northeast Shark River Slough, which will result in a lower long-term concentration limit. This will increase the potential for an excursion of the Settlement Agreement long-term TP concentration limit at Shark River Slough.

Water Supply: Water conditions in WCA-3A (Water Conservation Area-3A) have changed since the DEA was prepared. South Florida has experienced a drier than normal 2010 wet season, including the driest October on record. Moving water from WCA-3A through S-333 into Northeast Shark River Slough will reduce the water available in WCA-3A for water supply. With the strong La Niña conditions, and the projected extreme dry conditions associated with this event, the 2010/2011 dry season does not appear to be a prudent time to move water out of WCA-3A. This temporary deviation will lower WCA-3A levels quicker than normal. This could result in the need to impose water restrictions sooner than normally needed to protect the Miami-Dade Water and Sewer Department wellfields and South Dade agriculture, which depend on water deliveries from WCA-3A through the South Dade Conveyance System to meet their demands. The reliance of these water users on deliveries from WCA-3A is especially acute during extreme drought events such as is predicted for the 2010/2011 dry season. The potential for a drought and attendant water supply concerns do not match the "very wet conditions" in WCA-3A that prompted the request for the temporary deviation, and therefore the Corps should reconsider the feasibility of implementing the proposed temporary deviation from current G-3273 criteria.

Coordination with Other Proposed Operational Changes: Successful implementation of the temporary deviation will also be dependent on synchronization with other Corps activities in South Miami-Dade County that will modify current operations. The Environmental Assessment mentions that the recently constructed 8.5 Square Mile Area (8.5 SMA) pump station and protective levee provide an opportunity to relax the G-3273 criteria that trigger flood protection measures, yet the interim operations test of these facilities has been extended for another year. The Corps should demonstrate that the 8.5 SMA facilities are fully functional and can protect the area from the increased flows that will result from relaxing the G-3273 constraint.

The Corps states in the DEA that the proposed relaxation of the G-3273 constraint is compatible with changes that would be implemented under the Everglades Restoration Transition Plan (ERTP). The DEA for the temporary deviation does not include an evaluation of the cumulative impact resulting from the combination of the ERTP proposal to lower the WCA-3A regulation schedule and the proposal to relax the G-3273 constraint. The tentatively selected plan chosen by the Corps for the first phase of ERTP does not include a change to the G-3273 criteria. These operational changes cannot be implemented simultaneously without prior assessment of the cumulative impacts of these actions. Implementation of the temporary deviation to G-3273 criteria and the ERTP lowering of the WCA-3A regulation schedule must also be accompanied by a method for monitoring and evaluating separately the impacts of these operational changes so that the proposed criteria can be verified, modified or discontinued as necessary.

The specific comments provided by the SFWMD are attached. Comments include a transmittal sent to the Corps Technical Team on December 21, 2009 from the SFWMD providing input on a G-3273 trigger stage modification field test, including suggestions for preliminary analyses, a detailed operating regime, and monitoring gage selection that would provide meaningful information about the performance of the operational modifications. These comments provided previously are still applicable to the currently proposed test.

The SFWMD appreciates the opportunity to comment. However, unless additional information is provided that resolves the aforementioned comments, the SFWMD must consider having to formally object to the proposed action under the State of Florida's Coastal Zone Management Program. The SFWMD looks forward to an opportunity to work with the Corps to resolve these issues. If we can be of further assistance, please contact Thomas Teets, Assistant Deputy Executive Director for Everglades Restoration and Capital Projects at (561) 682-6993.

Sincerely,

Kenneth G. Ammon, P.E.
Deputy Executive Director
Everglades Restoration and Capital Projects
South Florida Water Management District

KGA/lc
Attachment

c: Greg Knecht, FDEP
Tom Olliff, SFWMD
Thomas Teets, SFWMD
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Deena Reppen
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Kim Shugar
Fred Sklar
Tommy Strowd
Susan Sylvester
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Attachment 1

South Florida Water Management Detailed Comments
Draft Environmental Assessment for Temporary Deviation from IOP Table; ES-1; S-333: G-3273 Constraint, Miami-Dade County, Florida

Draft Finding of No Significant Impact, Item e: "The proposed action will not adversely affect water quality": The proposed action will adversely affect water quality. It will increase the flow-weighted mean concentration of total phosphorus (TP) by moving more water to S-333, which has a higher TP concentration than at the S12 structures. Also, more flow into Northeast Shark River Slough (NESRS) will result in a lower long-term compliance TP limit if the total flow into Everglades National Park (ENP) is increased. This will increase the potential for the excursion of the Settlement Agreement TP concentration compliance at the Shark River Slough.

Draft Finding of No Significant Impact, Item e: "Water quality will continue to be monitored at the existing S-12 and S-333 structure locations." Is there any water quality monitoring program by the Corps at these sites? If not, the SFWMD's weekly monitoring should be cited.

Draft Finding of No Significant Impact, Item f. "All structure flows and canal levels will be monitored to ensure that no significant impacts occur to flood protection levels." If this is the case, an extensive water quality monitoring program will be needed at affected sites in addition to current weekly water quality monitoring by the District.

Page 3, Missing Map: This page is missing the map that is labeled "Figure 1: Temporary Deviation from IOP Tables ES-1; S-333; G-3273 Constraint Deviation Project Area Map"

Page 4, Section 1.3, "Project Need or Opportunity", 1st Paragraph: "The overarching project need is to increase the availability of S-333 to assist in lowering water levels in WCA 3A in anticipation of a potentially very wet season". The need to manage high water levels in WCA 3A is given as the "overarching project need" for the temporary deviation, however, most of the documentation that follows this statement describes the downstream needs and benefits to NESRS in ENP. Clarify the hydrologic "before and after conditions" in WCA 3A that are the foundation for the temporary deviation. Explain why water levels in WCA 3A should be lowered. What constitutes "very wet" conditions in WCA 3A? What are the indicators that this condition will persist for the interval proposed for the temporary deviation?

Page 4, Section 1.3, 1st paragraph, last sentence: "This test period may provide information necessary to move toward a permanent change in operations once the remaining Modified Water Deliveries and C-111 features are available". The proposed test has no defined objectives or hypothesis. In the absence of a cause and effect relationship indentified for testing, and no thresholds for testing, the only objective seems to be the raising of the G-3273 constraint. The SFWMD has previously provided technical input to the Corps on the concept of testing alternative criteria for G-3273. Please see Attachment 2, "SFWMD Draft Comments on G-3273 Trigger State Modification Field Test", which includes suggestions for preliminary analyses, a detailed operating regime and monitoring gage selection to provide meaningful information for long-term effectiveness of the proposed operating criteria.

Page 4, Section 1.3, 2nd Paragraph: "Since many of the MWD features have been built, including the protective levee around the 8.5 SMA and much of the C-111 detention area to the south, there are more opportunities to begin testing the relaxation of the G-3273 constraint." While the 2009 wet season test of the interim operations plan for the new 8.5 SMA facilities was completed, the SFWMD has reviewed a September 2010 draft report that suggests that the test should be extended to address potential impacts to flood protection within the southwest corner of the 8.5 SMA Protective Levee project. The next iteration of the test may include structural enhancements or modifications as well as revisions to the interim operating criteria. These test results and uncertainty about the operation of the 8.5 SMA water control features raise concerns about the risks to flood protection within the 8.5 SMA that could result from increasing flows from WCA 3A to NESRS. Before raising the G-3273 constraint, the Corps should demonstrate that the increase in flows to NESRS that will result from the proposed temporary deviation is compatible with the 8.5 SMA Interim Operations 2009 Test results. The Corps should also verify that the proposed modification of the G-3273 criteria can be implemented before the satisfactory conclusion of the 8.5 SMA Interim Operations test.

Page 4, Section 1.3, 2nd paragraph: "Currently, the flow distribution is 55% through the S-333 into NESRS and 45% through the S-12 structures into ENP west of the L-67 Extension". The percentages cited are targets for the distribution of flows to ENP; these targets cannot always be achieved. The following revision is suggested to clarify the relationship between a target and the actual distribution. "Currently, the rainfall plan has a target flow distribution of 55% through the S-333 into NESRS and 45% through the S-12 structures into ENP west of the L-67 Extension in Northwest Shark River Slough (NWSRS). This distribution is rarely achieved when the total flow (NESRS +NWSRS) exceeds 1,000 cfs."

Page 6, Section 1.7, Scoping and Issues. The concern for flow-weighted mean TP concentration and compliance with the Everglades Settlement Agreement should be addressed here. Appendix A of the Everglades Settlement Agreement established long-term phosphorus concentration limits for Shark River Slough based on the magnitude of flows entering ENP through S-12 A-D, S-333 and other structures. Discharges through S-333 historically have had the highest total phosphorus (TP) concentration of waters entering ENP. Changes in the temporary deviation to G-3273 criteria that result in increased discharges through S-333 will increase the TP concentrations and loads entering ENP, and will likely cause exceedances of the Everglades Settlement Agreement long-term TP limit.

Page 9, Section 2.2, Issues and Basis for Choice: There is no reference here to the first sentence on Page 4, "The overarching project need is to increase the availability of S-333 (Figure 2) to assist in lowering water levels in WCA 3A in anticipation of a potentially very wet season." Benefits to ENP were described but there is no mention of improvements to WCA 3A. Explain how the selected alternative will address the stated WCA 3A need.

Page 9, Section 2.3, Preferred Alternative(s), 4th bullet: "The Corps Water Management Section assessment of hydrometeorological conditions and stakeholder or agency input may suspend or discontinue the temporary deviation." Describe the performance measures and methodology that will be used to determine whether to suspend or discontinue the temporary deviation. Explain how stakeholder input and input from the SFWMD will be

gathered by the Corps Water Management Section to inform the decision to end the temporary deviation.
Page 10, Section 2.3, Preferred Alternative(s), last paragraph: "It is expected that even if the operations change during the course of this deviation from IOP to ERTP operations, this deviation would still be applicable and appropriate for implementation. ERTP is anticipated to retain the G-3273 constraint, so this deviation would still be a beneficial action through December 2010". This statement appears to be inconsistent with the tentatively selected plan for the ERTP that was released by the Corps on October 6, 2010. The selected plan stated that the current Interim Operating Plan (IOP) could not continue due to public health and safety concerns about the L-29 levee. The plan proposed to offset the potential risk of overtopping or breaching L-29 by lowering the WCA-3A regulation schedule. The selected ERTP alternative did not include a recommendation to relax the G-3273 constraint. The proposed temporary deviation cannot be implemented in concert with the tentatively selected ERTP without analysis to determine if relaxing the G-3273 constraint is compatible with the lower regulation schedule for WCA 3A proposed for the first phase of ERTP.

Page 12, Geology and Soils, 2nd paragraph, last sentence: "Higher elevation marshes of the southern Everglades on either side of Shark Rive Slough are characterized by calcitic marl soils deposited by calcareous algal mats and exposed limerock surfaces with karst features such as solution pits and sinkholes." Explain further how changes in hydrology have altered soil characteristics by inserting following after above quoted sentence: "Historical research indicates that even on these higher elevation marshes, under predrainage conditions, a thin and variable layer of peat soil originally covered the presently exposed calcareous soils. This peat layer has been lost to oxidation as a result of substantially lowered water levels."

Page 13, Section 3.4 "Hydrology", 1st and 2nd sentences: "The primary source of water for the ENP comes from direct rainfall and accounts for approximately 70% of the total influx. The remaining 30% enters ENP in the form of surface flow." The proposed temporary deviation is designed to prompt more natural patterns of flow between the WCA 3A and ENP. Clarify the historical role of flow from upstream by revising these sentences as follows: "Under the present system of water management, the primary source of water for the ENP comes from direct rainfall and accounts for approximately 70% of the total influx. The remaining 30% enters ENP in the form of surface flow. Under pre-drainage conditions, surface flow played a much larger role, resulting in (1) greater average depths; (2) longer hydroperiods; (3) much more hydric vegetation; and (4) greater southward flows to Florida Bay."

Page 13, Section 3.4 "Hydrology", 2nd paragraph, 1st sentence: The 8.5 SMA, Rocky Glades and Taylor Slough areas are situated in a relatively drier portion of the Everglades (higher ground). The majority of this higher area is in the 60 to 120 day-inundation range." The current conditions, especially in this eastern area, have been drastically altered by drainage. Consider revising as follows: "The 8.5 SMA, Rocky Glades and Taylor Slough areas all fall within the original extent of the Everglades. The eastern edge of the Everglades, including the 8.5 SMA and the Rocky Glades, were originally somewhat higher than Shark Slough, with the difference being approximately one foot. Under post-drainage conditions of much reduced water levels and decreased hydroperiods, substantial peat subsidence has occurred within Shark Slough, accentuating the elevation difference between Shark Slough and the eastern portions of the Everglades. Under pre-drainage conditions, the eastern area (the Marl Marshes, also known as marl prairies) had

hydroperiods of 8-9 months (240-270 days). Under the present conditions of drainage, hydroperiods are much reduced, being in the 60 to 120 day inundation range."

Pages 13-14, Section 3.4.1, "Water Conservation Areas 3A, 3B (WCA-3A, -3B)": The description of WCA 3A and 3B documents the "pool" and anthropogenic water storage characteristics of 3A and 3B, but does not address these areas as part of the Everglades. The stated purpose of the proposed temporary deviation is to relieve "very wet" conditions in WCA 3A; clarify the condition of WCA 3A by mentioning the following characteristics:

- Originally sloped, with sloped water surface generally parallel to the downstream ground slope
- Originally continually flowing
- Presently impounded, with resulting "wedge" of water depths: too dry upstream, too wet downstream
- Peats presently exposed to oxidation and fire; some tree islands exposed to inundation, others to elevation loss by oxidation
- WCA 3A contains some of the best-conserved Everglades landscape

Page 14, 3.4.1, "Water Conservation Areas 3A, 3B", 2nd paragraph: "The storage is used to meet the principal water supply needs of adjacent areas, including urban water supply and salinity control requirements for Miami-Dade and Monroe Counties, irrigation requirements and water supply for ENP." Moving water from WCA 3A through S-333 into NESRS will reduce the water available from WCA 3A from a water supply perspective. With the strong La Niña conditions – and projected extreme dry conditions associated with this event – the 2010/2011 dry season does not appear to be a prudent time to move water out of WCA 3A. This temporary deviation will lower WCA 3A levels quicker than normal, which could result in the need to impose water restrictions sooner than normally needed for (a) Miami-Dade Water and Sewer Department's wellfields (particularly the Northwest Wellfield and (b) South-Dade agriculture, who depend on water deliveries from WCA 3A through the South Dade Conveyance System to meet their crop demands (and keep their crops alive), especially during extreme drought events such as is predicted for the 2010/2011 dry season.

Page 14, Section 3.4.1, "Water Conservation Areas 3A, 3B", 3rd paragraph: "Simulation runs for existing conditions indicate that WCA-3A is very wet for the majority of the area (90%). For a wet year, the percentage goes to 100%." "Very wet" is a qualitative, and here undefined term. It also appears to incorporate or at least clearly imply a value judgment of "very wet and hence undesirable." Quantitative depths and hydroperiods should be given instead, and these should be compared to pre-drainage conditions. Additionally, a distinction must be made between water depths within sloughs and on sawgrass ridges. Predrainage elevation differences between ridges and sloughs were approximately 1.5 feet, meaning very different hydroperiods and water depths were present on these two components. Currently, water depths in sloughs toward southern 3A are somewhat, but not greatly higher than predrainage slough water depths (temporal average). However, depths in the southern portion tend not to drop down as much the dry season as they did under predrainage conditions. Further upstream in 3A the current conditions are considerably drier than under pre-drainage conditions. Clarify the expected results of the temporary deviation by describing the wet conditions and associated impacts that prompt the need for the proposed deviation, and explain the conditions that will signify termination of the temporary deviation.

Page 16, Section 3.4.5, "Lower East Coast Area", 2nd sentence: "The area can be affected by seepage from the canals if water levels are too high." The G-3273 trigger is principally a flood protection measure; therefore, it is important to understand the hydrologic characteristics that are captured by the G-3273 criteria. Expand the description of seepage effects as follows: The seepage into L-31N increases greatly as the inundated areas of NESRS expand to the L-31N levee. Once the water level is sufficiently deep to convey water at a rate to keep up with the seepage (e.g. 6 to 12 inches) the seepage rate increases linearly with increasing stage if all other factors remain unchanged (e.g. canal stage).

Page 16, Section 3.4.6.8.5, "8.5 SMA": References made here to the Rocky Glades and ENP are extraneous; the description should be limited to the area within the 8.5 SMA Project. The description does not mention the approximately 1,900 acres of natural area contained within the 8.5 SMA project area; located between ENP eastern boundary and the western protection levee.

Page 16, Section 3.4.8, "Florida Bay": This section should include text documenting that reducing damaging flow to Florida Bay was and is an authorized goal of the C-111 project (authorized in the 1994 C-111 General Re-evaluation Report). In addition, the text should acknowledge that increasing the stage in NESRS without unlimited use of S-356 or another seepage management system such as a slurry wall, will increase the likelihood of flow through S-331 which exceeds the capacity of S-332B, S-332C, and S-332D. Once the capacity of S-332B, S-332C, and S-332D are exceeded, openings of S-176 and S-177 are likely. Florida Bay is most sensitive to flow through S-176 during nesting season which usually occur in the latter half of the dry season.

Page 26, Section 3.8 "Water Quality", 2nd paragraph, "In the central Everglades, phosphorus concentrations entering the ENP were lower in 1997 than the interim and long term limits established by the 1992 Settlement Agreement in United States v. South Florida Water Management District, Case No. 88-1886-CIV-WMH (S.D.Fla.) (Walker 1998)." The 1997 evaluation is not relevant to the current state of Settlement Agreement compliance. The more relevant fact is that flow weighted mean TP concentrations (FWMCs) were at the long-term limits for the last three water years (10.2 ppb, 8.2 ppb and 8.9 ppb) since the limit was effected on 12/31/2006. This section should address the Settlement Agreement by acknowledging the narrow margin of the current state of compliance,. The limitations of the long-term limit on flow changes at the S-12s and S-333 should be assessed.

Page 28, Section 3.9, "Flood Control", entire 2nd paragraph: The description is too general and not correct. Suggest limiting the discussion to the smaller area that will be impacted by the proposed temporary deviation.

Page 28, Section 3.9, "Flood Control", entire 2nd paragraph: The description is too general and not correct. Suggest limiting the discussion to the smaller area that will be impacted by the proposed temporary deviation.

Page 36, Section 4.10.2 Alternative B: "Water quality should not be significantly impacted by this alternative. This deviation would allow for additional water to be moved from WCA

3A into NESRS. This would result in a volume change but not a quality change from current operations." Provide analysis that supports this statement. Also, more flow into NESRS may result in a lower long-term compliance limit concentration if the total flow into ENP is increased. This will increase the potential for excursion of the Settlement Agreement TP concentration compliance at the Shark River Slough.

Page 36, Section 4.10.2, "Alternative B": "Water quality is currently monitored at the S-12 and S-333 structures and the data collected during this test will be analyzed for any changes in phosphorus or other nutrients of concern. This will be useful information for future efforts to increase water deliveries to NESRS." The current weekly monitoring by SFWMD data may not have sufficient resolution for this proposed analysis. There may be a need for a more detailed special monitoring plan. Further, Alternative B should be discussed with respect to the Settlement Agreement long-term TP limit. If revised operation of S-333 (and the S-12s) leads to an excursion of the long-term TP FWMC limit, what will the remedy be? Although the Environmental Assessment proposes this as a test, it could lead to an excursion.

Page 41, Section 4.18, "Unavoidable Adverse Environmental Effects": "No unavoidable adverse environmental impacts have been identified in the environmental analysis of this short duration operational deviation." This is a very debatable statement. Previous comments have identified the lack of detail regarding the wet conditions in WCA 3A that are to be addressed by the proposed deviation. There has been no analysis of potential impacts to water quality to back up this statement.

Page 41, Section 4.19, "Conflicts and Controversy": "Most issues which would cause conflicts or controversy were intentionally removed from this deviation". Previous comments question whether the newly constructed 8.5 SMA protective levee is fully functional and can offset the increase in flows that would result from relaxing the constraint at G-3273. The 8.5 SMA test has been extended while the Corps contemplates remedies, including structural enhancements, to address flood impacts that occurred during 2009 wet season test operations. The suggestion has been made to defer relaxation of the G-3273 constraint until the 8.5 SMA interim operations are finalized. Preceding comments have also warned of possible excursion of the Settlement Agreement TP concentration compliance at Shark River Slough and the need for more a more detailed special monitoring plan to gauge this possibility when the temporary deviation is implemented.

Page 41, Section 4.20, "Compliance with Environmental Requirements": Appendix A of the Everglades Settlement Agreement was omitted. Compliance with the terms of the Settlement Agreement should be included as an environmental requirement.

Pages 62 to 66, "Appendix B": It will be helpful if the flow volume changes can be quantified due to the proposed temporary deviation based on the historical data as showed in Figures 1-5 for S-331. Similarly, the historical G-3273 stages and flow data at S-12s can be analyzed to quantify the flow changes at S-12s from the proposed temporary deviation.

Page 66, Figure 5: The figure has insufficient data to show the conditions. Additional data is provided in Attachment 3 to correct this figure. The flow through S-334 (as the flow into NESS is S-333 minus S-334) should be shown. Also S-333 TW and S-334 HW stage should be shown so that the reader can see that the L-29 stage was allowed (by Florida Department of Transportation) to be above 7.5 (but below 8.0 feet NGVD) from about

November 20, 2008 through December 9, 2008. It should also be noted that almost no rain occurred during this period so the rise in G-3273 is caused by the flow from L-29 (S-333 minus S-334); which was about 600 cfs during the approximately 30-day period when the L-29 stage limit was raised from 7.5 to 8.0 feet NGVD. The lag in rise of G-3273 is consistent with the large area that L-29 feeds. NESRS is approximately 11 miles wide and G-3273 is located about nine miles south of Tamiami Trail.

Page 67, "Annex A", 3rd paragraph: "Under certain conditions, S-18C range of operation may vary from 2.4 (open) to 2.2 (close) instead of the 2.25 (open) to 2.0 (close) used during column 2 operations. This adjustment is within the ranges specified in both modes of operation outlined in Table ES-1." Is this required or optional? What are the criteria for using the ranges 2.4/2.2 versus 2.2.5/2.0?

Page 67, "Annex A", 4th paragraph: "If all pumps are available at S332B west and S332C and S332D is available an operation range of 4.8 to 4.6 could be used during the months of November and December." Is this required or optional? What are the criteria for using the 4.8/4.6 range? If all of the pumps are not available wouldn't there be a greater need for a lower range? There is a need for clear operational criteria such as when G-3273 stage is above 6.8 feet NGVD the operational range 4.8/4.6 for Column 1 operations of S-332B and S-332C.

Page 67, "Annex A", 5th paragraph: "Under certain conditions, S-335 releases may be adjusted as necessary to maintain L-30 within optimum levels. Releases may be made up to 300 cfs if S-335 headwater exceeds 6.0. Additional releases may be made if S-335 headwater exceeds 6.5 pending available capacity downstream. If G-3273 is above 6.8 and L-30 water levels are excessively high and S-335 releases are not improving L-30 and/or L-31N canal levels, consideration to other adjustments within the system will be made, which may include suspension of the temporary deviation, until G-3273 recedes to 6.8 or below". Is this required or optional?

Attachment 2

SFWMD Draft Comments on G-3273 Trigger Stage Modification Field Test Submitted on December 21, 2009 Comments to USACOE G-3273 Technical Team

The staff supports the concept of testing alternative criteria for improving environmental conditions in ENP. Our concerns center around the lack of specificity in the goals, objective, methodology, or monitoring for performance plans. The following provides suggestions for some preliminary analyses, a detailed operating regime, and monitoring gage selection which would help to provide meaningful information for the long-term operating effectiveness for this southern system.

The proposed testing plan has no defined objectives or hypothesis. In absence of a cause and effect relationship identified for testing, and thresholds for testing, the only objective seems to be solely the raising of the G-3273 constraint. The documentation should explain why the G-3273 constraint exists.

A stage of 6.8 feet NGVD indicates water depths and extent sufficient to cause seepage into the L-31N of a magnitude, in combination with inflows from S-334 and S-335, to make the routing of this excess water (to tide via S-338 or to the S-332B, S-332C, and S-332D detention areas via S-173/S-331) challenging.

Specifically, 6.8 feet NGVD indicates a sufficient depth to convey meaningful water east which would result in standing water along the west side of the L-31N levee. The presence of this standing water results in considerable seepage through the underlying, highly-transmissive, Surficial Aquifer System. There are currently several gages which can measure the water depth along the L-31N immediately west of the levee (G-3574, G-3576, G-3577, and G-3578). These gages should be included in any testing program with the potential for some or all of these gages to replace G-3273 as the key trigger.

Prior to initiating a field test such as is proposed, an analysis should be done that includes an evaluation of the relationship between the stages at these new gages (G-3574, G-3576, G-3577, and G-3578) and the seepage into the L-31N canal. The seepage into the L-31N reach between S-335 and G-211 can be estimated by performing water budgets on the following structures.

- S-334 (positive values indicates flow into the L-31N)
- S-335 (positive values indicates flow into the L-31N)
- S-336 (positive values indicates flow out of the L-31N); rarely used
- S-338 (positive values indicates flow out of the L-31N)
- G-211 (positive values indicates flow out of the L-31N)
- S-356 (positive values indicates flow out of the L-31N); currently only run for test and O&M

An excellent period of investigation would be prior to, during and after the passage of Hurricane Fay in the late summer of 2008.

A considerable portion of the seepage into the L-31N occurs from WCA-3B along the approximately 1.4 mile distance from S-335 to Tamiami Trail and needs to be included in the water budget analysis. The stages in the southeastern WCA-3B (gage 3BS1W1 or 3BS1W2 or S3BS1W3, or S3bS1W4) in combination with the flow (velocity) measured in the L-31N 1, 3, 4, and 5 miles south of Tamiami Trail (L31NMILE1, L31NMILE3, L31NMILE4, and L31NMILE5) by the acoustic velocity meters and the stage reading in the L-31N canal (S-335 TW and S-334 TW). The seepage from WCA-3B needs to be characterized as the stage in WCA-3B is affected by different factors than Northeast Shark Slough (NESS).

Operations without the Use of S-356

It is essential that a testing plan be developed which does not rely on the use of the S-356 pump station as it will likely take over a year to go through the permitting process required to authorize the sustained use of the S-356 pump station.

The G-3273 stage constraint could be raised from 6.8 feet NGVD to 7.0 feet NGVD for the months of July, August, September, October, November, and December provided that the following conditions and operations exist. For the months of January and February the G-3273 stage limit could be raised to 7.2 feet NGVD. The stage limit would then drop to 7.0 feet in March and April. The stage limit would remain 6.8 feet NGVD in May and June.

S-335 HW < 6.5 feet NGVD. The HW at S-335 is below 6.5 feet NGVD with up to 300 cfs of discharge through S-335. Discharge from S-335 initiates when S-335's HW exceeds 6.0 feet NGVD and increases, if there is downstream capacity, as S-335's HW approaches 6.5 feet NGVD. L-30 stages (S-335 HW) above 6.5 feet NGVD results from high water in WCA-3B, high water in the Pennsuco wetlands, or insufficient discharge capacity, or combinations thereof. Both high water and insufficient discharge capacity warrant returning to the original G-3273 stage limit of 6.8 feet NGVD until less adverse conditions exist. Higher water stages in WCA-3B results in increased seepage into the L-30 and L-31N Canal and a correspondingly larger discharge in order to maintain the S-335 HW stage below 6.5 feet NGVD. Similarly, higher stages in Northeast Shark Slough (NESS) result increased seepage into the L-31N canal. With increased seepage the capacity available through S-338 (to tide via S-148 and S-21) and S-331 is more likely to be insufficient.

NDA and SDA Operated Using an Operation Range between 4.5 and 5.0 feet NGVD. Since most of the capacity provided by S-338 is used to manage water discharge from S-335 almost all of the seepage into the L-31N Canal must be discharge to the C-111 detention areas via G-211, S-173/S-331. The C-111 detention areas consist of the Northern Detention Area (NDA), Southern Detention Area (SDA), and the Frog Pond Detention Area (FPDA). The Northern Detention Area once constructed will receive flow from the 8.5 SMA STA (four 125 cfs diesel pumps and one 75 cfs electrical pump) and the S-332B North Pump Station (two of the 125 cfs diesel pumps). Currently, only a small portion (240 acres) of the 1,440 acres of the Northern Detention Area has been constructed. The Southern Detention Area was completed in early 2009 and provides about 1,300 acres of detention area. The Southern Detention Area receives inflow from three of the S-332B pumps (two 125 cfs diesel pumps and one 75 cfs electrical pump), all of the S-332C pumps (four 125 cfs diesel pumps and one 75 cfs electrical pump), and up to about 250 cfs diverted from the Frog Pond Detention Area to the Southern Detention Area via S-332DX1. Allowing a slightly lower operation

range of the S-332B, S-332C, and S-332D provides the ability to handle additional discharge through S-173/S-331 while minimizing discharges through S-176. Since reducing harmful discharges to Florida Bay is a primary objective of the C-111 detention areas, we do not want the additional seepage caused by higher stages in NESS to trigger S-176 openings.

Data Required (average daily values)

- G-3574 Stage
- G-3576 Stage
- G-3577 Stage
- G-3578 Stage
- S-334 HW, TW, and Flow
- S-335 HW, TW, and Flow
- S-336 HW, TW, and Flow
- S-38 HW, TW, and Flow
- G-211 HW, TW, and Flow
- L31NMILE1 (Stage, Velocity, and Flow)
- L31NMILE3 (Stage, Velocity, and Flow)
- L31NMILE4 (Stage, Velocity, and Flow)
- L31NMILE5 (Stage, Velocity, and Flow)
- SBS1W1, SBS1W2, SBS1W3, and SBS1W4 Stages
- SBSE Stage
- Krome/G-978/G-3558
- G-3352/G-3553/G-3554

Summary

The District supports the concept of improving system flexibility to allow for the more effective delivery of flows to the southern areas, both ENP and Florida Bay. We will be available to discuss the details of this plan at the Corps convenience.

Attachment 3

Data for Correction of Figure 5 (PAGE 66 of PDF)

DBKEY	STATION	AGENCY	COUNTY	TYPE	UNITS	STAT	FQ
15615	S333_S	WMD	DAD	FLOW	CFS	MEAN	DA
15617	S333_T	WMD	DAD	STG	FT NGVD29	MEAN	DA
DJ184	S334_H	WMD	DAD	STG	FT NGVD29	MEAN	DA
FB752	S334_S	WMD	DAD	FLOW	CFS	MEAN	DA

	S333 Q (cfs)	S-333 TW (feet NGVD)	S-334 HW (feet NGVD)	S-334 Q (cfs)
01-OCT-2008	0	7.624	7.594	0
02-OCT-2008	0	7.596	7.563	0
03-OCT-2008	0	7.575	7.525	0
04-OCT-2008	0	7.605	7.545	0
05-OCT-2008	0	7.625	7.570	0
06-OCT-2008	0	7.600	7.545	0
07-OCT-2008	0	7.579	7.510	0
08-OCT-2008	0	7.539	7.492	0
09-OCT-2008	0	7.566	7.526	0
10-OCT-2008	0	7.582	7.547	0
11-OCT-2008	0	7.571	7.531	0
12-OCT-2008	0	7.565	7.488	6.850
13-OCT-2008	0	7.543	7.473	30.070
14-OCT-2008	0	7.592	7.502	0
15-OCT-2008	0	7.560	7.488	0
16-OCT-2008	0	7.527	7.464	0
17-OCT-2008	0	7.495	7.449	0
18-OCT-2008	0	7.441	7.405	90.840
19-OCT-2008	0	7.395	7.334	155.850
20-OCT-2008	101.496	7.407	7.333	150.690
21-OCT-2008	162.693	7.412	7.343	180.070
22-OCT-2008	375.333	7.414	7.308	391.880
23-OCT-2008	147.045	7.418	7.308	160.860
24-OCT-2008	.319	7.388	7.330	0
25-OCT-2008	0	7.372	7.346	0
26-OCT-2008	0	7.395	7.374	0
27-OCT-2008	236.983	7.463	7.428	74.730
28-OCT-2008	385.769	7.472	7.400	259.150
29-OCT-2008	386.619	7.435	7.367	310.430
30-OCT-2008	450.680	7.441	7.351	366.490
31-OCT-2008	489.027	7.428	7.314	454.950
01-NOV-2008	491.034	7.396	7.293	479.560
02-NOV-2008	483.860	7.369	7.271	491.980
03-NOV-2008	485.728	7.370	7.287	446.850
04-NOV-2008	487.568	7.393	7.304	409.240
05-NOV-2008	488.616	7.383	7.297	411.480
06-NOV-2008	484.905	7.370	7.288	411.770
07-NOV-2008	485.354	7.364	7.271	440.910
08-NOV-2008	485.093	7.315	7.227	497.220

09-NOV-2008	482.401	7.296	7.194	496.680
10-NOV-2008	553.189	7.304	7.176	535.750
11-NOV-2008	621.837	7.322	7.172	590.130
12-NOV-2008	616.113	7.360	7.192	627.330
13-NOV-2008	613.514	7.374	7.226	655.430
14-NOV-2008	612.917	7.359	7.220	649.110
15-NOV-2008	611.651	7.355	7.249	649.010
16-NOV-2008	604.578	7.354	7.210	620.610
17-NOV-2008	787.924	7.432	7.273	634.690
18-NOV-2008	917.165	7.514	7.335	676.860
19-NOV-2008	914.870	7.508	7.320	681.710
20-NOV-2008	1166.336	7.630	7.441	658.830
21-NOV-2008	1272.362	7.773	7.587	600.490
22-NOV-2008	1257.374	7.812	7.608	564.980
23-NOV-2008	1247.633	7.815	7.623	565.450
24-NOV-2008	1309.363	7.856	7.672	571.250
25-NOV-2008	1335.957	7.893	7.715	570.830
26-NOV-2008	1326.532	7.899	7.715	569.090
27-NOV-2008	1316.722	7.898	7.718	572.220
28-NOV-2008	1307.239	7.896	7.724	574.080
29-NOV-2008	1294.492	7.902	7.727	574.120
30-NOV-2008	1278.073	7.923	7.746	573.320
01-DEC-2008	1282.555	7.953	7.774	582.300
02-DEC-2008	1279.397	7.955	7.759	575.690
03-DEC-2008	1275.058	7.947	7.757	565.620
04-DEC-2008	1269.659	7.938	7.779	540.340
05-DEC-2008	1256.567	7.952	7.806	484.530
06-DEC-2008	1243.974	7.963	7.817	473.200
07-DEC-2008	1237.174	7.963	7.813	470.450
08-DEC-2008	1228.034	7.962	7.797	469.930
09-DEC-2008	489.795 E	7.784	7.674	414.010
10-DEC-2008	0 E	7.544	7.474	433.060
11-DEC-2008	30.311 E	7.448	7.429	226.750
12-DEC-2008	0	7.390	7.406	0
13-DEC-2008	0	7.341	7.340	0
14-DEC-2008	0	7.323	7.294	0
15-DEC-2008	3.276	7.294	7.271	0
16-DEC-2008	0	7.258	7.249	0
17-DEC-2008	0	7.231	7.223	0
18-DEC-2008	0	7.204	7.199	0
19-DEC-2008	0	7.182	7.177	0
20-DEC-2008	0	7.153	7.161	0
21-DEC-2008	0	7.133	7.144	0
22-DEC-2008	.164	7.114	7.119	.030
23-DEC-2008	86.542	7.123	7.073	94.790
24-DEC-2008	114.004	7.143	7.099	46.060
25-DEC-2008	116.943	7.166	7.145	0
26-DEC-2008	123.642	7.167	7.147	0
27-DEC-2008	119.108	7.162	7.131	0
28-DEC-2008	123.690	7.145	7.136	0
29-DEC-2008	119.737	7.120	7.133	0

30-DEC-2008	115.742	7.103	7.122	0
31-DEC-2008	122.552	7.094	7.120	0