APPENDIX B: EVERGLADES RESTORATION TRANSITION PLAN ANNUAL ASSESSMENTS (WATER YEAR 2010 THROUGH WATER YEAR 2015)

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

OCT 26 2011

Mr. Bob Progulske, Assistant Field Supervisor
South Florida Ecological Services Field Office
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960-3559

Dear Mr. Progulske,

In accordance with the November 17, 2010 U.S. Fish and Wildlife Service Biological Opinion on the Everglades Restoration Transition Plan (ERTP), the U.S. Army Corps of Engineers has prepared an annual assessment for Water Year 2011 covering the time period between October 1, 2010 and September 30, 2011. The assessment documents water management operations and includes an analysis of Incidental Take and ERTP Performance Measures. If you have any questions or need additional information, please contact Dr. Gina Ralph at 904-232-2336.

Sincerely,

Kenneth R Chopp

for Eric P. Summa
Chief, Planning Division
Environmental Branch

Enclosure

ANNUAL ASSESSMENT REPORT: WATER YEAR 2011 (OCTOBER 1, 2010-SEPTEMBER 30, 2011)

Everglades Restoration Transition Plan

Prepared by
Department of the Army
Jacksonville District Corps of Engineers

31 OCTOBER 2011

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. Introduction

In accordance with the Terms and Conditions contained within the November 17, 2010 U.S. Fish and Wildlife Service (FWS) Biological Opinion (BO) on the Everglades Restoration Transition Plan (ERTP), the U.S. Army Corps of Engineers (USACE) is required to provide an annual assessment of ERTP operations. This annual assessment includes a summary of the Periodic Scientists Calls, analysis of incidental take, analysis of ERTP performance measures and ecological targets and species monitoring. The Incidental Take Statements (ITS), Terms and Conditions and Reinitiation Notice as defined in the 2010 ERTP BO are included as Appendix A. Species monitoring reports are included within Appendix B and Periodic Scientists Calls documentation reports in Appendix C. All data used within this analysis was obtained from either the DBHYDRO database (http://my.sfwmd.gov/dbhydroplsql/show_dbkey_info.main_menu) maintained by the South Florida Water Management District or the EDEN Network (http://sofia.usgs.gov/eden/stationlist.php), maintained by the United States Geological Survey. Please note that all data is considered provisional and subject to change, unless otherwise noted. For additional information concerning Section II and Appendix C of this report, please contact Olice Williams at Olice.E.Williams@usace.army.mil; for additional information concerning the remainder of this document, please contact Dr. Gina Ralph at Gina.P.Ralph@usace.army.mil.

II. Periodic Scientists Calls

A. Summary of Input Received by Agency

As part of the Water Conservation Area 3 (WCA-3) Periodic Scientists Call (PSC) process, members of Federal, State and Local Agencies, Tribes and the general public are invited to participate. Table 1 provides a summary of input from Federal, State and Local Agencies as well as the Miccosukee Tribe of Indians of Florida provided for the PSCs within Water Year 2011 (WY11, October 1, 2010 through September 30, 2011).

B. Summary of Actions Taken by USACE

Table 1 provides a summary of water management operations for WY11. Operations include making WCA-3A rainfall plan target flow releases at the S-12 and S-333 structures (i.e. 45% at S-12s and 55% at S-333). Operations also include discharges through S-333 as needed for water supply purposes for Miami-Dade County.

C. USACE Decision-Making Rationale (Considerations)

Factors taken into consideration when performing water management operations includes, but is not limited to, potential impacts to public health and safety, as well as water supply needs, local basin runoff, current weather conditions, forecasted weather

conditions, ecological conditions, flood protection, salinity control, groundwater control, estuary conditions, agricultural irrigation, and recreation. In addition, since the Record of Decision for ERTP has not yet been executed, water management operations are defined by the 2006 Interim Operational Plan (IOP) for Protection of the Cape Sable Seaside Sparrow (CSSS).

D. Hydrologic Analysis of Actions Taken

With the exception of the 21-Oct-2010 PSC actions which were to maximize releases from WCA-3A the water management actions taken for WY11 were to minimize releases from WCA-3A while remaining consistent with IOP 2006.

E. Conclusions

All operational decisions remained consistent with IOP 2006 making releases based on the WCA-3A Rainfall-Based Management Plan target flows while taking into consideration the multiple sources of input including the PSC forum.

Table 1. Water Conservation Area 3 Periodic Scientists Call: Summary of recommendations, decisions and hydrologic effects for WY11 (October 2010 through September 30, 2011).

PSC Date	Summary of Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Hydrologic Results
21-Oct-2010	Management efforts should focus on preventing water depths from exceeding 2.5 feet for more than 120 days where tree islands are present. To prevent negative ecological impacts, we recommend a recession rate of 0.05 ft/week or less for both WCA 3A and WCA 3B.	Continued operations included balancing maximum practicable discharges from WCA-3A with WCA-3A inflows to achieve desired recession rate. Operations included continued maximum practicable discharges through S-151 (WCA-3A to WCA-3B), no discharges through S-31, and maximum practicable discharges through S-12A-D and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow.	Inflow: S-11s = 0 cubic feet per second (cfs) Outflow: S-12s (includes S-12A-D)= 1370 cfs (daily average) S-333= 364 cfs (daily average) S-334= 0 cfs S-151= 206 cfs (daily average) S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	Maximize releases from WCA-3A.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow.
18-Nov-2010	In order to prevent negative ecological impacts, the recommendation was for a recession rate of <0.05 feet/week for WCA-3A and WCA-3B.	Continued operations included balancing maximum practicable discharges from WCA-3A with WCA-3A inflows to achieve desired recession rate. Currently, there are no inflows to WCA-3A. Therefore, discharges from WCA-3A are being minimized. However, discharges needed to be made in order to meet the WCA-3A Rainfall-Based Management Plan. Operations included maximum practicable discharges through S-12B-D and S-333 to meet the Rainfall Plan target flow.	Inflow: S-11s = 0 cfs Outflow: S-12s (includes S-12B-D)= 150 cfs (daily average) S-12A= 0 cfs (as per 2006 IOP) S-333= 222 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow.
9-Dec-2010	Recommend continued releases through the S-333 and S-12B-D structures to maintain flow deliveries for wildlife habitat within Everglades National Park.	Continued operations include balancing WCA-3A discharges and inflows to achieve desired recession rates. Currently, there are no inflows to WCA-3A. Therefore, discharges from WCA-3A are being minimized. There are no discharges being made from the S-12s due to the small WCA-3A Rainfall-Based Management Plan (rainfall plan) target flow. Operations include maximum practical discharges through S-333 to meet the rainfall plan. There continues to be no discharges made through S-151 and S-31(WCA-3B) as well as no discharges from S-343A, S-343B, and S-344.	Inflow: S-11s = 0 cfs Outflow: S-12B-D= 0 cfs S-12A= 0 cfs (as per 2006 IOP) S-333= 28 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Releases at S-333 to meet WCA-3A Rainfall-Based Management Plan target flow.
2-Feb-2010	Retain water in the WCAs, particularly within WCA-1 and WCA-3A for ecosystem needs (e.g. plant communities, wading birds, peat hydration and microtopography).	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S-12C, S-343A, S-343B, and S-344 remain closed per 2006 IOP.	Inflow: S-11s = 0 cfs Outflow: S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Releases at S-333 and S-334 for water supply.

PSC Date	Summary of Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Hydrologic Results
			S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)		
24-Feb-2011	Retain water in the WCAs to prevent peat fires, maximize the duration of wading bird foraging conditions, maximize snail kite nesting conditions and increase apple snail survival.	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S-12C, S-343A, S-343B, and S-344 remain closed per 2006 IOP.	Inflow: S-11s = 0 cfs Outflow: S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 138 cfs (daily average) S-334= 132 cfs (daily average) S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Releases at S-333 and S-334 for water supply.
17-Mar-2011	Reduce recession rates, including reducing outflows from WCA-3A to the extent possible to help prevent peat fires, support successful foraging opportunities for nesting snail kites, wood storks, roseate spoonbills, and other wading birds and their young, and help increase apple snail survival.	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S-12C, S-343A, S-343B, and S-344 remain closed per 2006 IOP.	Inflow: S-11s = 0 cfs Outflow: S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 309 cfs (daily average) S-334= 295 cfs (daily average) S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Releases at S-333 and S-334 for water supply.
14-Apr-2011	Reduce recession rates, including reducing outflows from WCA-3A to the extent possible to help prevent peat fires, support successful foraging opportunities for nesting snail kites, wood storks, roseate spoonbills, and other wading birds and their young, and help increase apple snail survival.	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S-12C, S-343A, S-343B, and S-344 remain closed per 2006 IOP.	Inflow: S-11s = 0 cfs Outflow: S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 228 cfs (daily average) S-334= 200 cfs (daily average) S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Releases at S-333 and S-334 for water supply.
5-May-2011	Reduce recession rates, including reducing outflows from WCA-3A to the extent possible to help prevent peat fires, support successful foraging opportunities for nesting snail kites, wood storks, roseate spoonbills, and other wading birds and their young, and help increase apple snail survival.	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S-12C, S-343A, S-343B, and S-344 remain closed per 2006 IOP.	Inflow: S-11s = 0 cfs Outflow: S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 287 cfs (daily average) S-334= 278 cfs (daily average)	Minimize releases from WCA-3A.	Releases at S-333 and S-334 for water supply.

PSC Date	Summary of Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Hydrologic Results
			S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)		
9-Jun-2011	Reduce recession rates, including reducing outflows from WCA-3A to the extent possible to help prevent peat fires, support successful foraging opportunities for nesting snail kites, wood storks, roseate spoonbills, and other wading birds and their young, and help increase apple snail survival.	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S‑12C, S‑343A, S‑343B, and S-344 remain closed per 2006 IOP.	Inflow: S-11s = 0 cfs Outflow: S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 243 cfs (daily average) S-334= 148 cfs (daily average) S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Releases at S-333 and S-334 for water supply.
30-Jun-2011	Support rehydration of northern WCA-3A with clean water in an effort to rehydrate the peat and address MFL violations. Send flows through Shark River Slough to raise wetlands stages, reduce hypersaline conditions in Florida Bay and address the Minimum Flows and Levels (MFL) exceedance of Florida Bay.	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S‑12C, S‑343A, S‑343B, and S-344 remain closed per 2006 IOP.	Inflow: S-11s = 0 cfs Outflow: S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	No releases from WCA-3A.
8-Jul-2011	Support rehydration of northern WCA-3A with clean water in an effort to rehydrate the peat and address MFL violations. Send flows through Shark River Slough to raise wetlands stages, reduce hypersaline conditions in Florida Bay and address the MFL exceedance of Florida Bay.	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S‑12C, S‑343A, S‑343B, and S-344 remain closed per 2006 IOP. S-151 opened July 1 in anticipation of reaching Zone E1 of WCA-3A Regulation Schedule. S-151 scheduled to be closed July 18.	Inflow: S-11s = 0 cfs Outflow: S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 0 cfs S-334= 0 cfs S-151= 134 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Effect of S-151 discharges (1-Jul to 18-Jul) on WCA-3A stage was approximately 0.01 feet.
21-Jul-2011	No releases from S-151 and S-333 until the stages at Site 65 and Site 64 are 9.0 ft NGVD and 9.3 ft NGVD respectively, to support the rehydration of northern WCA-3A with clean water and maximize apple snail egg production as well as send flows through Shark Slough to raise wetlands	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. As per 2006 IOP, S-12A, S-12B, S‑12C, S‑343A, S‑343B, and S-344 may be opened July	Inflow: S-11s = 200 cfs (daily average) Outflow: S-12s= 0 cfs S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs	Minimize releases from WCA-3A.	Releases at S-11s to meet WCA-2A Regulation Schedule.

PSC Date	Summary of Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Hydrologic Results
	stages and reduce the hypersaline conditions in Florida Bay and address MFL exceedance of Florida Bay.	15; however, these structures remain closed as per the WCA-3A Rainfall-Based Management Plan. Inflow from WCA-2A through S-11C commenced July 21, and at time of PSC was discharging approximately 200 cfs (daily average).	S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs		
11-Aug-2011	No releases from S-151 and S-333 until the stages at Site 65 and Site 64 are 9.0 ft NGVD and 9.3 ft NGVD respectively, to support the rehydration of northern WCA-3A with clean water and maximize apple snail egg production as well as send flows through Shark Slough to raise wetlands stages and reduce the hypersaline conditions in Florida Bay and address MFL exceedance of Florida Bay.	The WCA-3A Rainfall-Based Management Plan target flow was 0 cfs; therefore, no discharges through the S-12 or S-333 were required to meet the Rainfall Plan. However, discharges were made through S-333 as needed for water supply. S-12A, S-12B, S‑12C, S‑343A, S‑343B, and S-344 remain closed per 2006 IOP. Inflow from WCA-2A through S-11C commenced July 21, discharging approximately 267 cfs (daily average).	<u>Inflow:</u> S-11s = 267 cfs (daily average) <u>Outflow:</u> S-12D= 0 cfs S-12A-C= 0 cfs (as per 2006 IOP) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	Releases at S-11s to meet WCA-2A Regulation Schedule.
1-Sep-2011	Allow water levels in Water Conservation Area 3A to increase up to 10.55 feet, NGVD at WCA-3AVG by October 1. Moderate ascension rates via S-12D and S-333 discharges in order to avoid increases of >0.50 feet/week to benefit apple snail reproduction.	Continued operations to meet WCA-3A Rainfall Plan Target Flow of 443 cfs. Discharges were to be made at S-12D (199 cfs) and S-333 (244 cfs from S-333). However, at ENP's desire, no releases through S-333 were made at this time, despite Rainfall-Based Management Plan target flow.	<u>Inflow:</u> S-11s = 650 cfs (daily average) <u>Outflow:</u> S-12D= 266 cfs (daily average) S-12A-C= 0 cfs (as per 2006 IOP) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	<u>Inflow:</u> Releases at S-11s to meet WCA-2A Regulation Schedule. <u>Outflow:</u> Releases at S-12D to meet WCA-3A Rainfall-Based Management Plan target flow.
22-Sep-2011	Allow water levels in Water Conservation Area 3A to increase up to 10.55 feet, NGVD at WCA-3AVG by October 1. Moderate ascension rates via S-12D and S-333 discharges in order to avoid increases of >0.50 feet/week to benefit apple snail reproduction.	Continued operations to meet WCA-3A Rainfall Plan Target Flow of 752 cfs. Discharges made at S-12D (339 cfs) and S-333 (414 cfs).	<u>Inflow:</u> S-11s = 626 cfs (daily average) <u>Outflow:</u> S-12D= 281 cfs (daily average) S-12A-C= 0 cfs (as per 2006 IOP) S-333= 458 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs (as per 2006 IOP) S-343B = 0 cfs (as per 2006 IOP) S-344= 0 cfs (as per 2006 IOP)	Minimize releases from WCA-3A.	<u>Inflow:</u> Releases at S-11s to meet WCA-2A Regulation Schedule. <u>Outflow:</u> Releases at S-12D and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow.

III. Incidental Take Statement Analysis: Everglade Snail Kite

A. Prolonged High Stages

1. ***Reinitiation Trigger****: If water levels rise above 10.5 feet, NGVD at gauge 3AS3W1 for 60 consecutive days in 2 consecutive years as a result of ERTP operations (or the period in which IOP remains in place), incidental take will be exceeded.*

Note: if water levels rise above 10.5 feet, NGVD at the 3AS3W1 gauge for 60 consecutive days in any single year, USACE will conduct a retrospective review to determine potential cause(s) of the high water and share this information with FWS.

Table 2. Total annual precipitation and the number of days Gauge 3AS3W1 was greater than 10.5 feet, NGVD (October 1, 2010 – September 30, 2011).

Year	Total Precipitation (inches; EDEN-NEXRAD)	Gauge 3AS3W1 High Water Peak Stage (feet, NGVD)	Number of Days Gauge 3AS3W1 > 10.5 feet, NGVD
2011	37.33*	10.19	0

* Note: Precipitation data for September 2011 are not yet available; therefore, total precipitation is limited to October 1, 2010 through August 31, 2011. Total precipitation will be updated once the data become available.

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

4. **Conclusion:** *As indicated in Table 2 and Figure 1, during WY11 water levels at Gauge 3AS3W1 did not rise above 10.5 feet, NGVD as a result of ERTP operations. As such there is no requirement for USACE to conduct a retrospective review of water management actions related to this ITS trigger.*

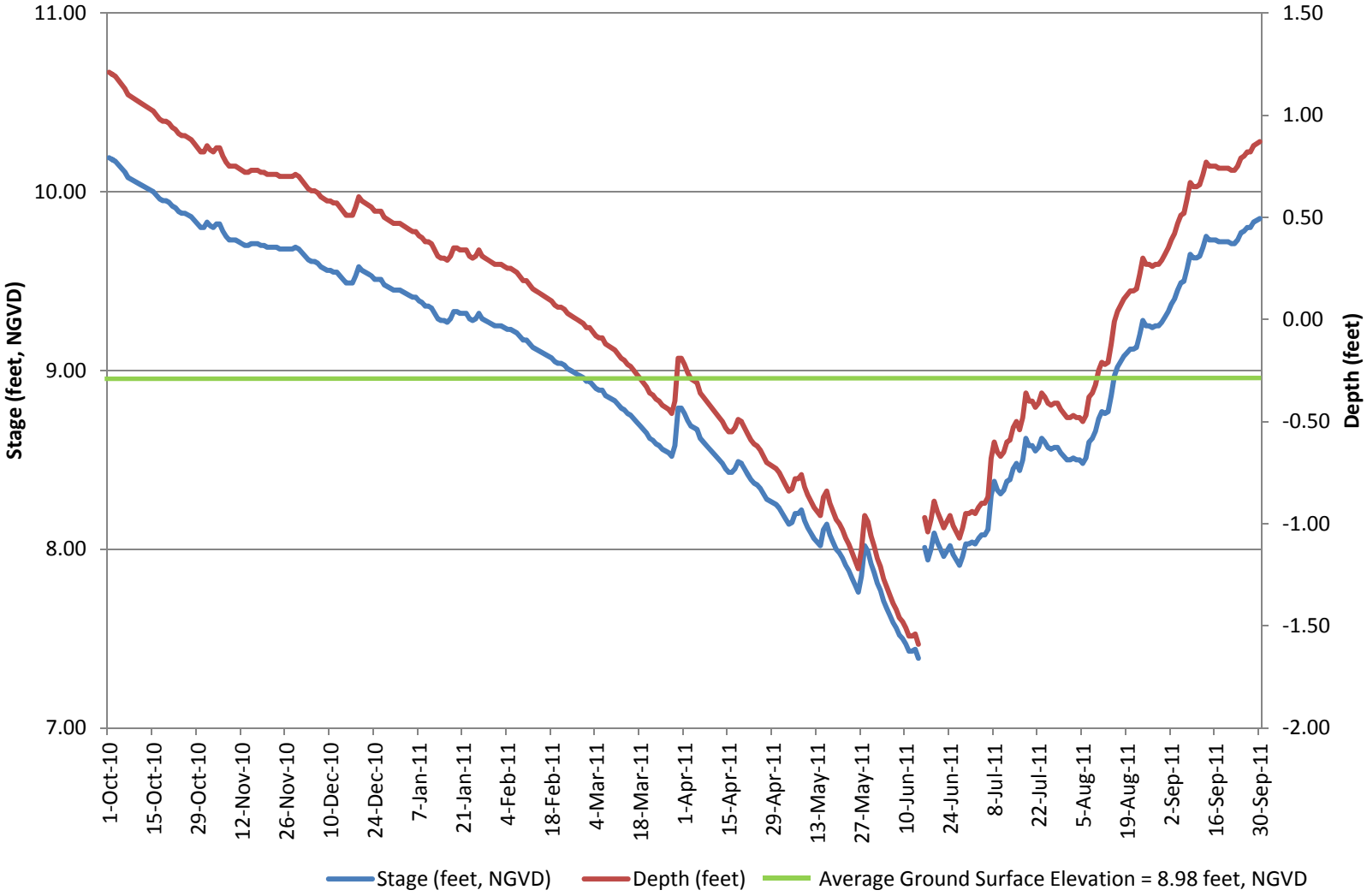

Figure 1. Gauge 3AS3W1 Stage (feet, NGVD) from October 1, 2010 through September 30, 2011.

B. High Water in Dry Season

1. **Reinitiation Trigger:** *Incidental Take will be exceeded when maximum water levels exceed 9.2 feet, NGVD at Gauge 3AS3W1 on or after April 15 in two consecutive years as a result of ERTP operations, or during the period when IOP remains in place.*

Note: If water levels exceed this threshold in any single year, USACE will conduct a retrospective review to determine the potential causes(s) of high water and will coordinate with FWS to apply adaptive management in an attempt to avoid high water conditions during future dry seasons.

Table 3. Number of days Gauge 3AS3W1 was greater than 9.2 feet, NGVD between April 15 and May 31, 2011.

Year	Total Precipitation (inches; EDEN-NEXRAD; January 1-May 31)	Gauge 3AS3W1 High Water Peak Stage (feet, NGVD)	Number of Days Gauge 3AS3W1 > 9.2 feet, NGVD (April 15-May 31)
2011	8.88	8.49	0

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

4. **Conclusion**: *As indicated in Table 3 and Figure 2, during WY11 water levels at Gauge 3AS3W1 did not rise above 9.2 feet, NGVD during the period between April 15 and May 31 as a result of ERTP operations. As such there is no requirement for USACE to conduct a retrospective review of water management actions related to this ITS trigger.*

Figure 2. Gauge 3AS3W1 Stage (feet, NGVD) from April 15 through May 31, 2011.

C. Rapid Recession Rates and Amplitude

1. **Reinitiation Trigger:** *Incidental Take will be exceeded if stages in WCA-3A, as measured by the gauge(s) closest to active kite nesting (assessed by FWS as described within the ERTP BO), recede by (1) more than 1.7 feet from January 1 through May 31 or the onset of the wet season, whichever is sooner, or (2) more than 0.34 feet within any 30-day period, in 2 consecutive years as a result of ERTP operations, or the period in which IOP remains in place.*

Note: If either of these amplitudes is exceeded in any single year, USACE will conduct a retrospective review to determine the potential cause(s) of the rapid recession and how future operations can avoid exceeding these thresholds.

Table 4. Dry Season Amplitude: WCA-3A January 1 to May 31 stage difference as measured at the specified gauges*.

Year	WCA-3A Stage Difference (January 1 to May 31)			
	3AS3W1	W2	3A-28	3A-4
2011	1.58	1.35	1.81	1.98

* Note: FWS has determined that all gauges listed are relevant to snail kite nesting during WY11.

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

Table 5. Dry Season Amplitude: WCA-3A January 1 to May 31, 30-day rolling stage difference as measured at the specified gauges.

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
1-Jan-11	9.45		9.37		9.38		9.69	
2-Jan-11	9.44		9.36		9.37		9.67	
3-Jan-11	9.43		9.35		9.36		9.67	
4-Jan-11	9.42		9.34		9.35		9.65	
5-Jan-11	9.41		9.33		9.34		9.65	
6-Jan-11	9.41		9.31		9.32		9.64	
7-Jan-11	9.39		9.30		9.31		9.62	
8-Jan-11	9.38		9.28		9.30		9.61	
9-Jan-11	9.36		9.26		9.28		9.60	
10-Jan-11	9.36		9.26		9.27		9.59	
11-Jan-11	9.35		9.25		9.26		9.58	
12-Jan-11	9.32		9.23		9.24		9.55	
13-Jan-11	9.29		9.22		9.22		9.54	
14-Jan-11	9.28		9.22		9.21		9.52	
15-Jan-11	9.28		9.21		9.21		9.52	
16-Jan-11	9.27		9.20		9.20		9.51	
17-Jan-11	9.29		9.21		9.21		9.52	
18-Jan-11	9.33		9.25		9.25		9.55	
19-Jan-11	9.33		9.23		9.24		9.54	
20-Jan-11	9.32		9.22		9.23		9.52	
21-Jan-11	9.32		9.21		9.22		NA	
22-Jan-11	9.32		9.21		9.22		NA	
23-Jan-11	9.29		9.19		9.21		NA	
24-Jan-11	9.28		9.19		9.20		NA	
25-Jan-11	9.29		9.19		9.20		NA	
26-Jan-11	9.32		9.21		9.22		9.53	
27-Jan-11	9.29		9.20		9.21		9.51	
28-Jan-11	9.28		9.19		9.20		9.50	
29-Jan-11	9.27		9.19		9.20		9.49	
30-Jan-11	9.26	0.19	9.18	0.19	9.19	0.19	9.49	0.20
31-Jan-11	9.25	0.19	9.18	0.18	9.18	0.19	9.48	0.19
1-Feb-11	9.25	0.18	9.17	0.18	9.18	0.18	9.47	0.20
2-Feb-11	9.25	0.17	9.17	0.17	9.17	0.18	9.47	0.18
3-Feb-11	9.24	0.17	9.16	0.17	9.17	0.17	NA	NA
4-Feb-11	9.23	0.18	9.15	0.16	9.16	0.16	NA	NA
5-Feb-11	9.23	0.16	9.14	0.16	9.15	0.16	NA	NA
6-Feb-11	9.22	0.16	9.12	0.16	9.13	0.17	NA	NA
7-Feb-11	9.21	0.15	9.11	0.15	9.12	0.16	9.43	0.17
8-Feb-11	9.19	0.17	9.09	0.17	9.10	0.17	9.40	0.19
9-Feb-11	9.17	0.18	9.08	0.17	9.09	0.17	9.39	0.19
10-Feb-11	9.17	0.15	9.07	0.16	9.08	0.16	9.39	0.16
11-Feb-11	9.15	0.14	9.05	0.17	9.06	0.16	9.37	0.17
12-Feb-11	9.13	0.15	9.04	0.18	9.04	0.17	9.35	0.17
13-Feb-11	9.12	0.16	9.03	0.18	9.03	0.18	9.34	0.18
14-Feb-11	9.11	0.16	9.02	0.18	9.02	0.18	9.34	0.17
15-Feb-11	9.10	0.19	9.01	0.20	9.01	0.20	9.32	0.20
16-Feb-11	9.09	0.24	9.00	0.25	9.00	0.25	9.32	0.23
17-Feb-11	9.08	0.25	8.99	0.24	8.99	0.25	9.31	0.23
18-Feb-11	9.07	0.25	8.97	0.25	8.97	0.26	9.30	0.22
19-Feb-11	9.05	0.27	8.96	0.25	8.96	0.26	9.28	
20-Feb-11	9.04	0.28	8.95	0.26	8.95	0.27	9.27	
21-Feb-11	9.04	0.25	8.93	0.26	8.93	0.28	9.27	
22-Feb-11	9.03	0.25	8.92	0.27	8.92	0.28	9.25	
23-Feb-11	9.01	0.28	8.90	0.29	8.90	0.30	9.24	
24-Feb-11	9.00	0.32	8.89	0.32	8.89	0.33	9.23	0.30
25-Feb-11	8.99	0.30	8.87	0.33	8.88	0.33	9.22	0.29
26-Feb-11	8.98	0.30	8.86	0.33	8.86	0.34	9.21	0.29
27-Feb-11	8.97	0.30	8.84	0.35	8.84	0.36	9.20	0.29
28-Feb-11	8.96	0.30	8.82	0.36	8.83	0.36	9.19	0.30
1-Mar-11	8.94	0.31	8.81	0.37	8.82	0.36	9.17	0.31
2-Mar-11	8.94	0.31	8.83	0.34	8.83	0.35	9.15	0.32
3-Mar-11	8.92	0.33	8.80	0.37	8.81	0.36	9.14	0.33
4-Mar-11	8.90	0.34	8.79	0.37	8.79	0.38	9.12	
5-Mar-11	8.89	0.34	8.77	0.38	8.77	0.39	9.11	

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
6-Mar-11	8.89	0.34	8.75	0.39	8.76	0.39	9.10	
7-Mar-11	8.86	0.36	8.74	0.38	8.74	0.39	9.08	
8-Mar-11	8.85	0.36	8.73	0.38	8.73	0.39	9.07	0.36
9-Mar-11	8.84	0.35	8.71	0.38	8.71	0.39	9.06	0.34
10-Mar-11	8.83	0.34	8.70	0.38	8.72	0.37	9.06	0.33
11-Mar-11	8.81	0.36	8.69	0.38	8.71	0.37	9.04	0.35
12-Mar-11	8.79	0.36	8.68	0.37	8.69	0.37	9.03	0.34
13-Mar-11	8.78	0.35	8.66	0.38	8.68	0.36	9.02	0.33
14-Mar-11	8.76	0.36	8.65	0.38	8.66	0.37	9.00	0.34
15-Mar-11	8.75	0.36	8.63	0.39	8.64	0.38	8.98	0.36
16-Mar-11	8.73	0.37	8.62	0.39	8.63	0.38	8.97	0.35
17-Mar-11	8.71	0.38	8.60	0.40	8.61	0.39	8.95	0.37
18-Mar-11	8.69	0.39	8.59	0.40	8.59	0.40	8.93	0.38
19-Mar-11	8.67	0.40	8.57	0.40	8.57	0.40	8.90	0.40
20-Mar-11	8.65	0.40	8.55	0.41	8.55	0.41	8.88	0.40
21-Mar-11	8.62	0.42	8.54	0.41	8.53	0.42	8.86	0.41
22-Mar-11	8.61	0.43	8.52	0.41	8.51	0.42	8.84	0.43
23-Mar-11	8.59	0.44	8.50	0.42	8.50	0.42	8.82	0.43
24-Mar-11	8.58	0.43	8.49	0.41	8.48	0.42	8.80	0.44
25-Mar-11	8.56	0.44	8.48	0.41	8.46	0.43	8.78	0.45
26-Mar-11	8.55	0.44	8.47	0.40	8.45	0.43	8.76	0.46
27-Mar-11	8.54	0.44	8.45	0.41	8.43	0.43	8.73	0.48
28-Mar-11	8.52	0.45	8.43	0.41	8.41	0.43	8.72	0.48
29-Mar-11	8.58	0.38	8.48	0.34	8.44	0.39	8.75	0.44
30-Mar-11	8.79	0.15	8.59	0.22	8.53	0.29	8.78	0.39
31-Mar-11	8.79	0.15	8.58	0.25	8.52	0.31	8.73	0.42
1-Apr-11	8.76	0.16	8.57	0.23	8.50	0.31	8.70	0.44
2-Apr-11	8.72	0.18	8.55	0.24	8.48	0.31	8.66	0.46
3-Apr-11	8.69	0.20	8.54	0.23	8.46	0.31	8.63	0.48
4-Apr-11	8.68	0.21	8.52	0.23	8.44	0.32	8.60	0.50
5-Apr-11	8.67	0.19	8.50	0.24	8.42	0.32	8.60	0.48
6-Apr-11	8.62	0.23	8.49	0.24	8.42	0.31	8.58	0.49
7-Apr-11	8.60	0.24	8.47	0.24	8.40	0.31	8.55	0.51
8-Apr-11	8.58	0.25	8.45	0.25	8.37	0.35	8.52	0.54
9-Apr-11	8.56	0.25	8.43	0.26	8.35	0.36	8.49	0.55
10-Apr-11	8.54	0.25	8.41	0.27	8.33	0.36	8.45	0.58
11-Apr-11	8.52	0.26	8.40	0.26	8.31	0.37	8.42	0.60
12-Apr-11	8.50	0.26	8.38	0.27	8.28	0.38	8.39	0.61
13-Apr-11	8.48	0.27	8.36	0.27	8.26	0.38	8.36	0.62
14-Apr-11	8.45	0.28	8.34	0.28	8.24	0.39	8.33	0.64
15-Apr-11	8.43	0.28	8.32	0.28	8.22	0.39	8.30	0.65
16-Apr-11	8.43	0.26	8.32	0.27	8.19	0.40	8.27	0.66
17-Apr-11	8.45	0.22	8.31	0.26	8.19	0.38	8.23	0.67
18-Apr-11	8.49	0.16	8.35	0.20	8.20	0.35	8.21	0.67
19-Apr-11	8.48	0.14	8.46	0.08	8.18	0.35	8.18	0.68
20-Apr-11	8.45	0.16	8.44	0.08	8.15	0.36	8.13	0.71
21-Apr-11	8.42	0.17	8.41	0.09	8.12	0.38	8.09	0.73
22-Apr-11	8.39	0.19	8.39	0.10	8.09	0.39	8.05	0.75
23-Apr-11	8.37	0.19	8.37	0.11	8.07	0.39	8.01	0.77
24-Apr-11	8.36	0.19	8.35	0.12	8.05	0.40	7.98	0.78
25-Apr-11	8.34	0.20	8.33	0.12	8.03	0.40	7.94	0.79
26-Apr-11	8.31	0.21	8.31	0.12	8.00	0.41	7.91	0.81
27-Apr-11	8.28	0.30	8.29	0.19	7.98	0.46	7.88	0.87
28-Apr-11	8.27	0.52	8.27	0.32	7.95	0.58	7.86	0.92
29-Apr-11	8.26	0.53	8.26	0.32	7.93	0.59	7.92	0.81
30-Apr-11	8.25	0.51	8.25	0.32	7.95	0.55	8.09	0.61
1-May-11	8.23	0.49	8.24	0.31	7.97	0.51	8.05	0.61
2-May-11	8.20	0.49	8.22	0.32	7.94	0.52	7.97	0.66
3-May-11	8.17	0.51	8.20	0.32	7.91	0.53	7.90	0.70
4-May-11	8.14	0.53	8.19	0.31	7.88	0.54	7.84	0.76
5-May-11	8.15	0.47	8.17	0.32	7.87	0.55	7.84	0.74
6-May-11	8.20	0.40	8.16	0.31	7.92	0.48	7.89	0.66
7-May-11	8.20	0.38	8.16	0.29	7.94	0.43	7.82	0.70
8-May-11	8.22	0.34	8.16	0.27	7.93	0.42	7.78	0.71
9-May-11	8.16	0.38	8.15	0.26	7.89	0.44	7.74	0.71

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
10-May-11	8.12	0.40	8.13	0.27	7.85	0.46	7.70	0.72
11-May-11	8.09	0.41	8.12	0.26	7.82	0.46	7.66	0.73
12-May-11	8.06	0.42	8.10	0.26	7.85	0.41	7.77	0.59
13-May-11	8.04	0.41	8.09	0.25	7.88	0.36	7.99	0.34
14-May-11	8.02	0.41	8.08	0.24	7.84	0.38	7.92	0.38
15-May-11	8.11	0.32	8.09	0.23	7.91	0.28	7.91	0.36
16-May-11	8.14	0.31	8.09	0.22	7.93	0.26	7.89	0.34
17-May-11	8.08	0.41	8.08	0.27	7.89	0.31	7.83	0.38
18-May-11	8.04	0.44	8.07	0.39	7.85	0.33	7.77	0.41
19-May-11	8.00	0.45	8.06	0.38	7.81	0.34	7.73	0.40
20-May-11	7.98	0.44	8.05	0.36	7.78	0.34	7.69	0.40
21-May-11	7.95	0.44	8.05	0.34	7.76	0.33	7.66	0.39
22-May-11	7.91	0.46	8.04	0.33	7.72	0.35	7.61	0.40
23-May-11	7.88	0.48	8.03	0.32	7.69	0.36	7.57	0.41
24-May-11	7.84	0.50	8.02	0.31	7.66	0.37	7.54	0.40
25-May-11	7.80	0.51	NA	NA	7.63	0.37	7.51	0.40
26-May-11	7.76	0.52	NA	NA	7.69	0.29	7.48	0.40
27-May-11	7.85	0.42	NA	NA	7.77	0.18	7.48	0.38
28-May-11	8.02	0.24	NA	NA	7.72	0.21	7.60	0.32
29-May-11	7.99	0.26	NA	NA	7.68	0.27	7.83	0.26
30-May-11	7.92	0.31	NA	NA	7.62	0.35	7.77	0.28
31-May-11	7.87	0.33	NA	NA	7.57	0.37	7.71	0.26

* Note: Numbers highlighted in yellow indicate recession rates that are greater than preferred (i.e. $\geq$0.34 feet) within a 30-day period.

4. ***Conclusion:*** *As shown in Table 4 and Table 5, both the dry season amplitude and the monthly amplitude were exceeded during the period between January 1 and May 31, 2011. As required under the ERTP BO, USACE has conducted a retrospective review to determine the potential cause(s) of the rapid recession and how future operations can avoid exceeding these thresholds. The review considered water management operations including releases through the WCA-3A outlet structures, evapotranspiration rates and WCA-3A inflows (e.g. rainfall). A spreadsheet analysis was employed to calculate the effect of S-333 water supply releases on WCA-3A stage. Based upon the results of this analysis, the effect of S-333 releases on WCA-3A stage during WY11 equates to an approximate total of 2.7 inches (0.23 feet). Figure 3 illustrates precipitation amounts along with S-333 and S-12 releases throughout the period between January 1 and May 31, 2011. As a result of this retrospective review, USACE has determined that the rapid recession rates experienced throughout this period were not a direct result of water management actions, but rather due to the extremely high evapotranspiration rates associated with a strong La Niña and widespread drought conditions.*

Since the majority of WCA-3A outlet structures (i.e. S-12A-D, S343A/B and S-344) were closed during this period, S-333 was opened to meet Lower East Coast water supply demands (as permitted by WCA-3A Regulation Schedule), and rapid recession rates were attributed to extremely high evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future. La Niña conditions similar to those experienced during 2011 are predicted for the 2012 dry season, therefore, if such conditions are realized, it is highly likely that the established thresholds will again be exceeded.

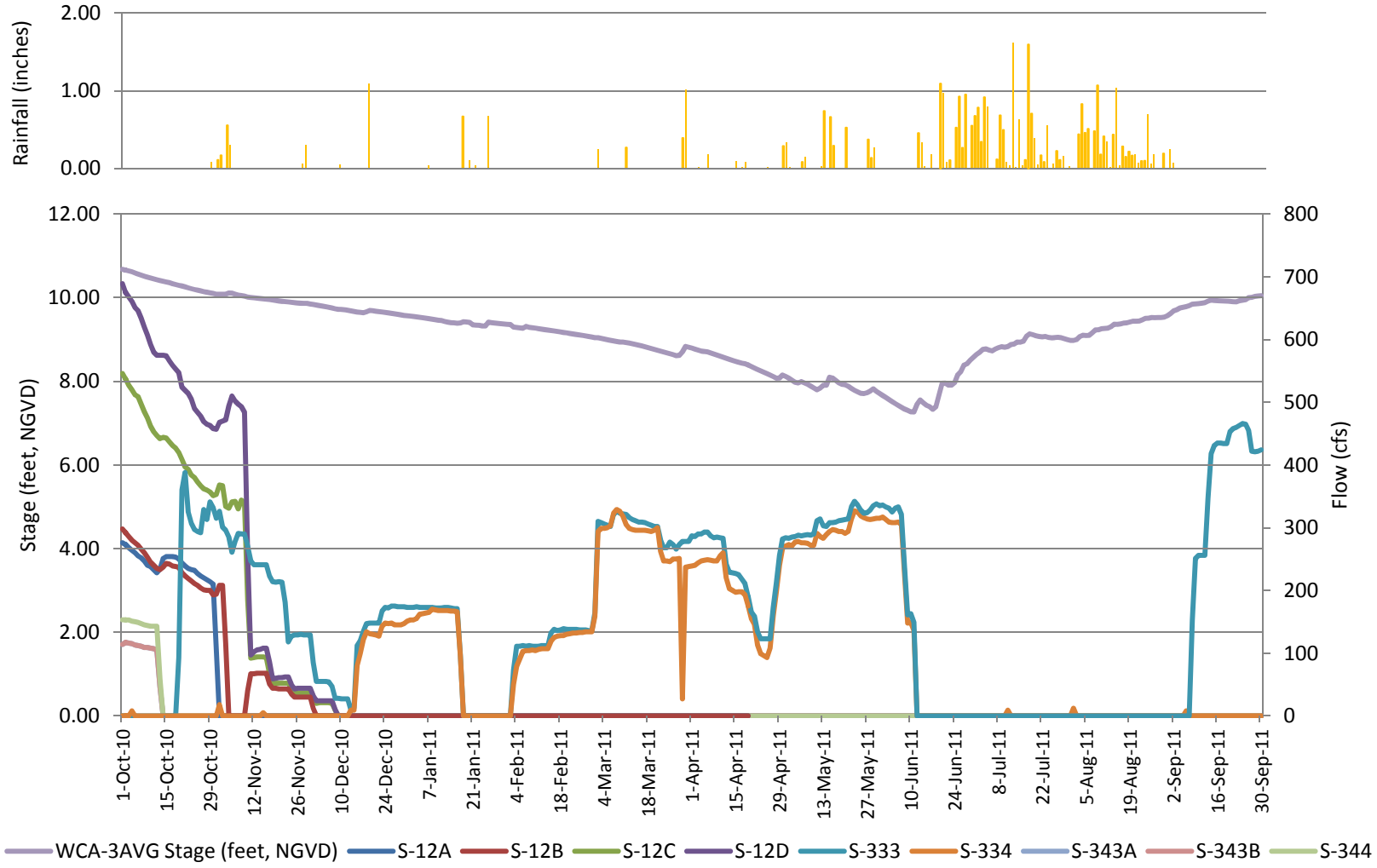

Figure 3. WCA-3AVG Stage (feet, NGVD), WCA-3AVG rainfall (inches) and WCA-3A outflow during WY11.

IV. Incidental Take Statement Analysis: Wood Stork

A. Breeding Season Foraging Depths

1. **Reinitiation Trigger:** *Incidental Take will be exceeded if ERTP or the interim IOP period results in a water depth greater than 16 inches (41 centimeters) from January 1 through May 31 over 78 percent of the surface area within the core foraging area of any active wood stork colony for 2 consecutive years.*

A water depth greater than 16 inches (41 centimeters) as measured by the 3A-4 or 3A-28 gauges during the nesting season across 847 square miles (220,400 hectares) of the core foraging area would lower the suitability of foraging habitat to the point where wood storks ability to forage would be severely impaired and most likely result in widespread abandonment of nests and fledglings within the affected colony.

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

Table 6. Number of days water depth exceeded 16 inches (41 centimeters) at the specified gauges between January 1 and May 31, 2011.

Month	Number of Days Water Depth Exceeded 16 inches (41 centimeters)	
	Gauge 3A-28	Gauge 3A-4
January	31	0
February	28	0
March	4	0
April	0	0
May	0	0
Total	63	0

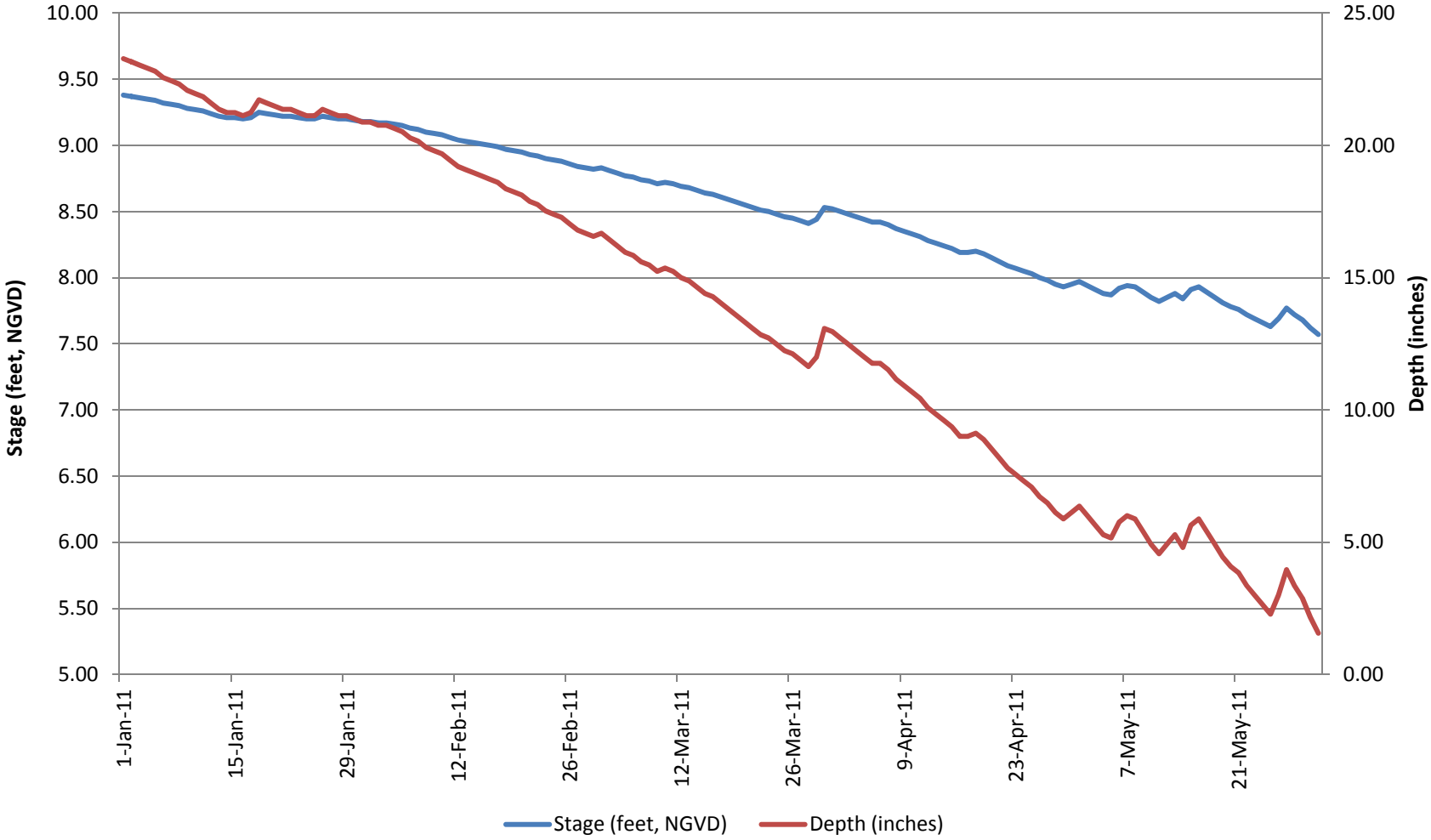

Figure 4. Gauge 3A-28 Stage (feet, NGVD) and water depth (inches) between January 1 and May 31, 2011.

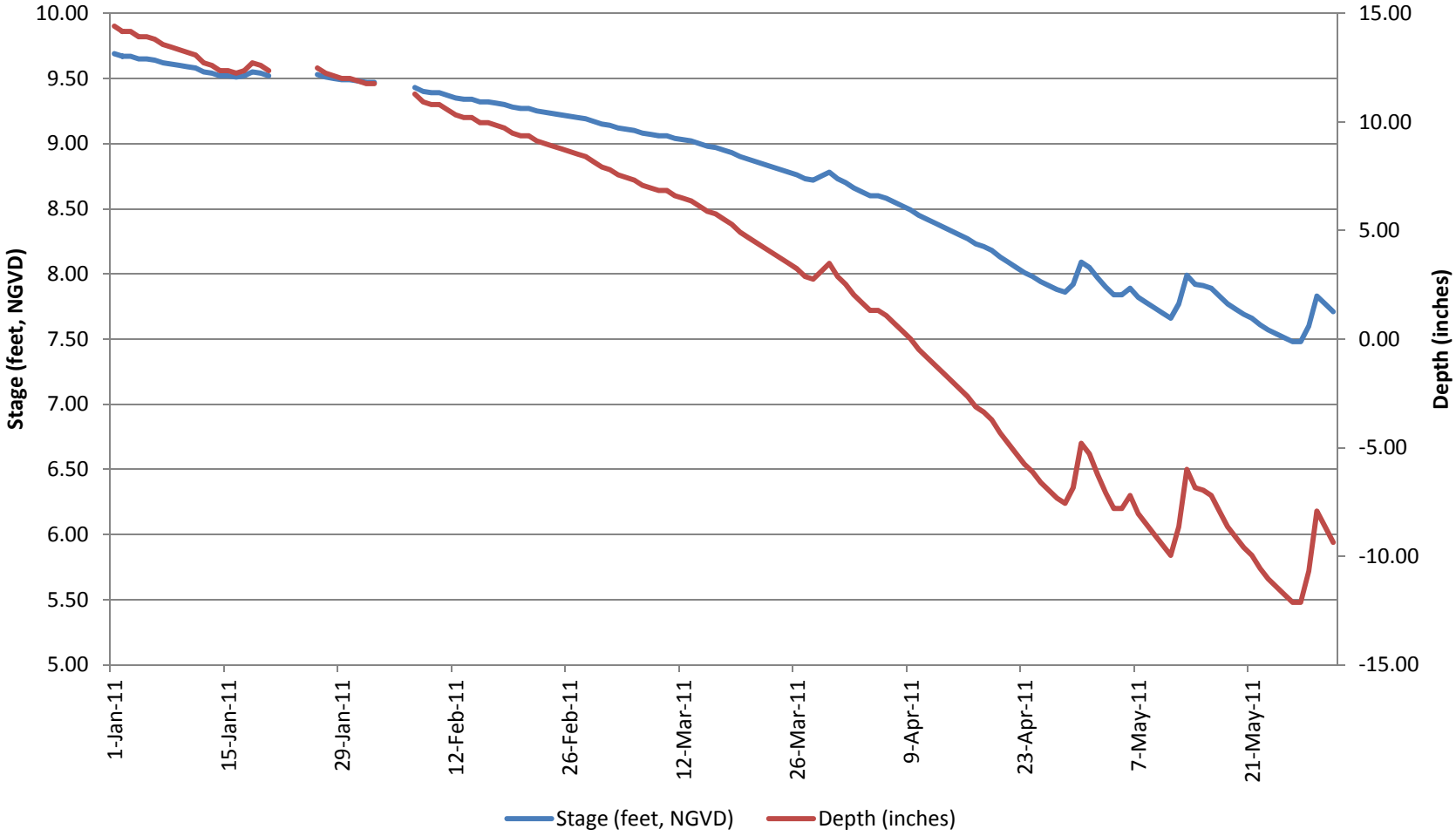

Figure 5. Gauge 3A-4 Stage (feet, NGVD) and water depth (inches) between January 1 and May 31, 2011.

*4. **Conclusion**: As shown in Table 6 and Figure 4, water depths at Gauge 3A-28 in southern WCA-3A exceeded 16 inches during January, February and early March. The water depth requirement for Gauge 3A-28 appears to be unrealistic, particularly during the early breeding season. As a result, USACE requested reinitiation of consultation on this trigger in January 2011. The 2011 dry season was the driest in 80 years with below normal amounts of rainfall and above average temperatures experienced across South Florida. Water depths were below ground surface elevation at Gauge 3A-4 by early April (Figure 5). Despite the historic drought conditions, water depths at Gauge 3A-28 still exceeded that required in the Incidental Take Statement, signifying that Gauge 3A-28 may not be the most appropriate representative of conditions throughout the foraging area.*

Within the wetland systems of southern Florida, the annual hydrologic pattern is very consistent, with water levels rising over three feet during the wet season (June-November), and then receding gradually during the dry season (December-May). Wood storks nest during the dry season, and rely on the drying wetlands to concentrate prey items in the ever-narrowing wetlands (Kahl 1964). Because of the continual change in water levels during the wood stork nesting period, any one site may only be suitable for wood stork foraging for a narrow window of time when wetlands have sufficiently dried to begin concentrating prey and making water depths suitable for storks to access the wetlands (Gawlik 2002; Gawlik et al. 2004). Once the wetland has dried to where water levels are near the ground surface, the area is no longer suitable for wood stork foraging, and will not be suitable until water levels rise and the area is again repopulated with fish. Consequently, there is a general progression in the suitability of wetlands for foraging based on their hydroperiods, with the short hydroperiod wetlands being used early in the season, the mid-range hydroperiod sites being used during the middle of the nesting season, and the longest hydroperiod areas being used later in the season (Kahl 1964; Gawlik 2002). As the dry season progresses, water levels continue to decline in a north to south direction across WCA-3A. Therefore, the use of Gauge 3A-28 as an Incidental Take/Reinitiation Trigger may be more appropriate during the latter part of the dry season (e.g. April-May) as water levels continue to decline in order to ensure suitable foraging depths throughout the entire breeding period.

V. Incidental Take Statement Analysis: Cape Sable Seaside Sparrow

A. Sparrow Population

1. ***Reinitiation Trigger****: If the annual CSSS population estimate falls below 2,915 sparrows [Mean population estimate 2001-2009 = 3,145 ± 230]), reinitiation of consultation must occur.*

Table 7. Cape Sable seaside sparrow bird count and population estimates by year as recorded by the Everglades National Park range-wide survey.

Population/ Year	CSSS-A		CSSS-B		CSSS-C		CSSS-D		CSSS-E		CSSS-F		Total	
	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST
2001	8	128	133	2,128	6	96	2	32	53	848	2	32	204	3,264
2002	6	96	119	1,904	7	112	0	0	36	576	1	16	169	2,704
2003	8	128	148	2,368	6	96	0	0	37	592	2	32	201	3,216
2004	1	16	174	2,784	8	128	0	0	40	640	1	16	224	3,584
2005	5	80	142	2,272	5	80	3	48	36	576	2	32	193	3,088
2006	7	112	130	2,080	10	160	0	0	44	704	2	32	193	3,088
2007	4	64	157	2,512	3	48	0	0	35	560	0	0	199	3,184
2008	7	112	NS	NS	3	48	1	16	23	368	0	0	34	544*
2009	6	96	NS	NS	3	48	2	32	27	432	0	0	38	608*
2010	8	128	119	1904	2	32	4	64	57	912	1	16	191	3,056
2011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

BC Bird Count
EST Estimate
NS Not Surveyed
NA: Not Available
* These numbers do not reflect a significant decline in CSSS population. CSSS-B, the largest and most stable subpopulation, was not surveyed in 2008 or 2009. Adding the 2007 CSSS-B population estimate of 2,512 birds to those of the other subpopulations, the estimated total CSSS population size is 3,056 and 3,120 birds for 2008 and 2009, respectively.

2. ***ITS Exceeded****: No*

3. ***Reinitiation Required:*** *No*

*4. **Conclusion:** 2011 population estimates are not yet available; therefore, no conclusions can be drawn at this time. However, during the 2011 CSSS nesting season, S-12A-C, S-343A/B and S-334 were closed as per their individual requirements in the 2006 Interim Operational Plan for Protection of the Cape Sable Seaside Sparrow (IOP), which is the most current operational plan for WCA-3-Everglades National Park-South Dade Conveyance System. IOP was designed to protect the CSSS to the maximum extent possible through water management operations, which resulted in closure periods for the aforementioned structures. The purpose of closure periods was to provide an improved opportunity for nesting within CSSS-A by maintaining water levels below ground level for a minimum of 60 consecutive days between March 1 and July 15, corresponding to the CSSS breeding season.*

Due to the extreme drought conditions experienced during WY11, the S-12B, S-12C, S-343A/B and S-344 structures were actually closed prior to their IOP closure dates as per the WCA-3 Regulation Schedule. In addition, S-12D which does not have a closure period associated with CSSS protection, closed December 9, 2010, thereby, further limiting flows into western Shark River Slough. S-12D was closed as per the WCA-3 Regulation Schedule due to the extreme dry conditions experienced throughout South Florida associated with La Niña. Stage data from NP-205 indicate that water was below ground surface level as early as December 14, 2010. Water levels increased slightly above ground surface for a period of 3 days (December 19-21, 2010) and then were again below ground surface level continuously between December 22, 2010 and June 26, 2011, a total of 186 days. Within the FWS-defined CSSS breeding window of March 1 through July 15, a total of 117 days of continuously dry conditions were experienced at NP-205.

As shown in Table 7, CSSS-A has not recovered under IOP operations, but has remained relatively stable since its implementation in 2002. There are several factors that influence population size including competition, predation and prey availability; recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (i.e. the Allee effect) (Boulton et al. 2009; Virzi et al. 2009). USACE has fully complied with IOP CSSS protection measures.

B. Cape Sable Seaside Sparrow Habitat: Eastern Marl Prairies

*1. **Reinitiation Trigger:** Operations that raise water levels from groundwater to surface water conditions beyond 0.6 mile of S-332 Detention Areas prior to June 1.*

2. ***ITS Exceeded:*** *No*

3. ***Reinitiation Required:*** *No*

4. ***Conclusions:*** *USACE asked for clarification of the time period for this trigger (November 2010), however, until clarification is provided USACE is assuming that water levels must be below ground surface elevation prior to the FWS-defined CSSS breeding period starting March 1. Thus, USACE is delimiting the period of analysis for this trigger to March 1 through June 1, 2011, until otherwise directed. As shown in Figure 6 through Figure 8, stages at Gauge MRSHOP B1, MRSHOP C1 and NTS-10, respectively, were well below ground surface elevation throughout the period between March 1 and June 1, 2011. USACE has concluded that based upon this trigger, reinitiation is not required at this time.*

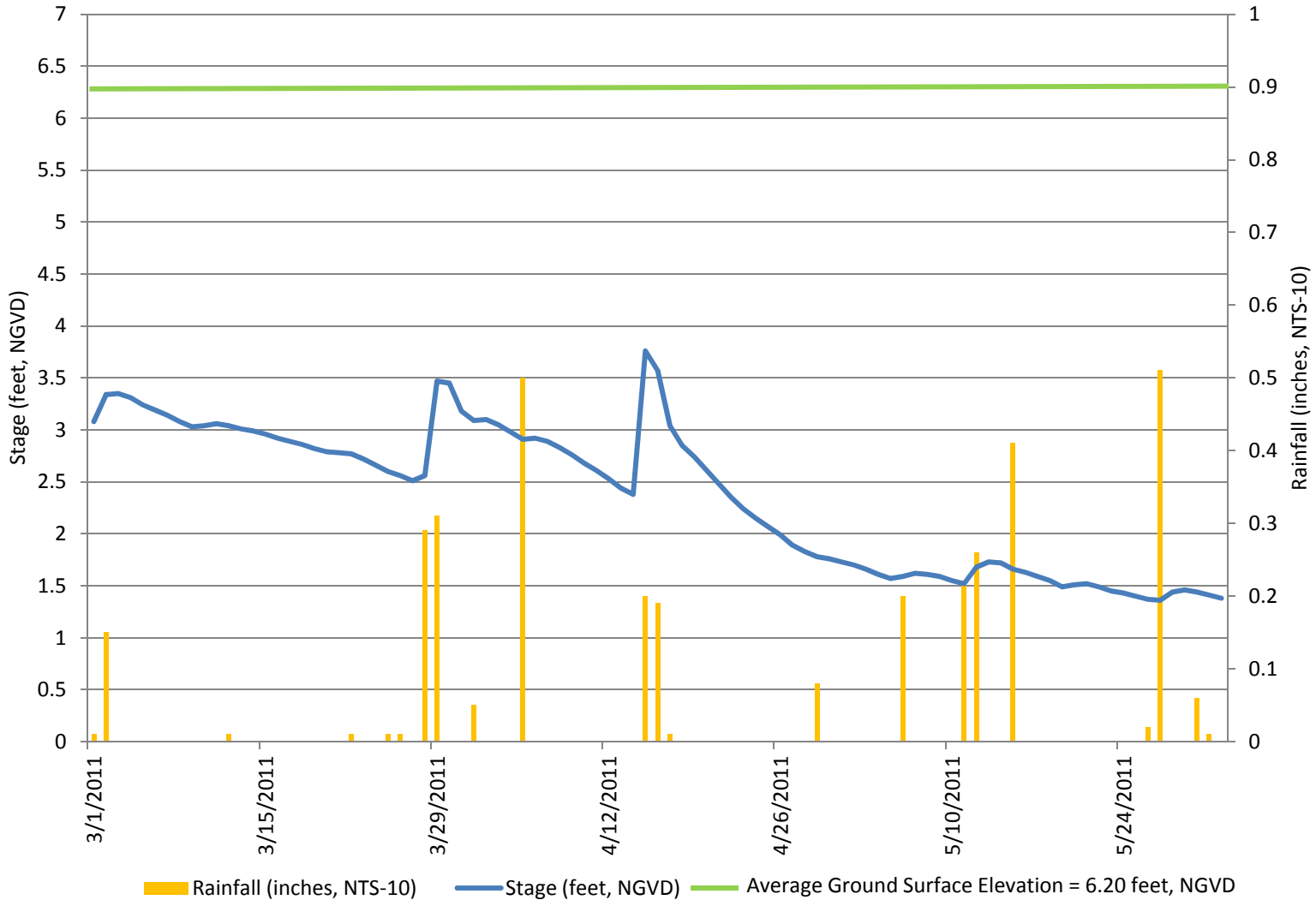

Figure 6. MRSHOP B1 stage (feet, NGVD) and rainfall (inches, Gauge NTS-10) between March 1 and June 1, 2011.

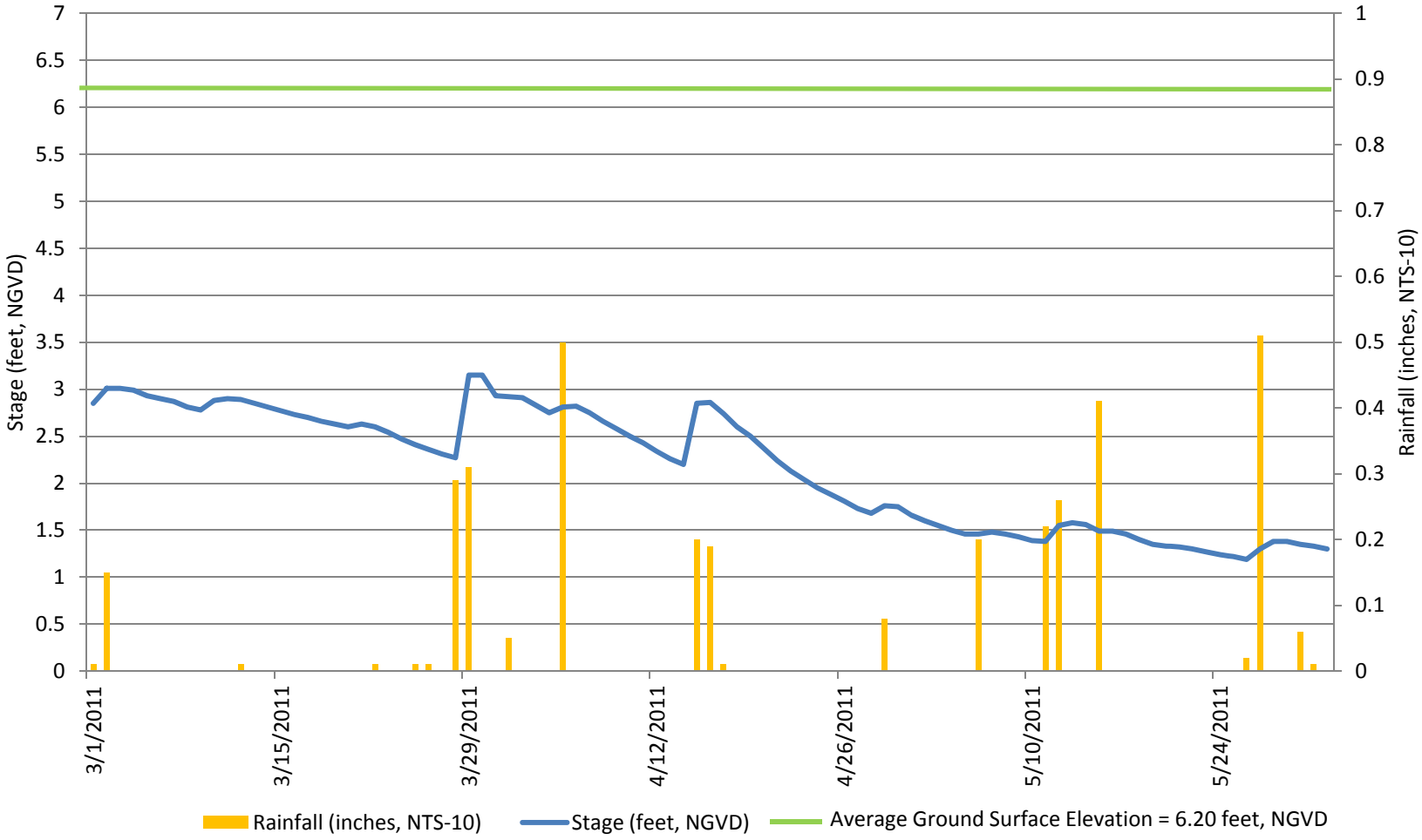

Figure 7. MRSHOP C1 stage (feet, NGVD) and rainfall (inches, Gauge NTS-10) between March 1 and June 1, 2011.

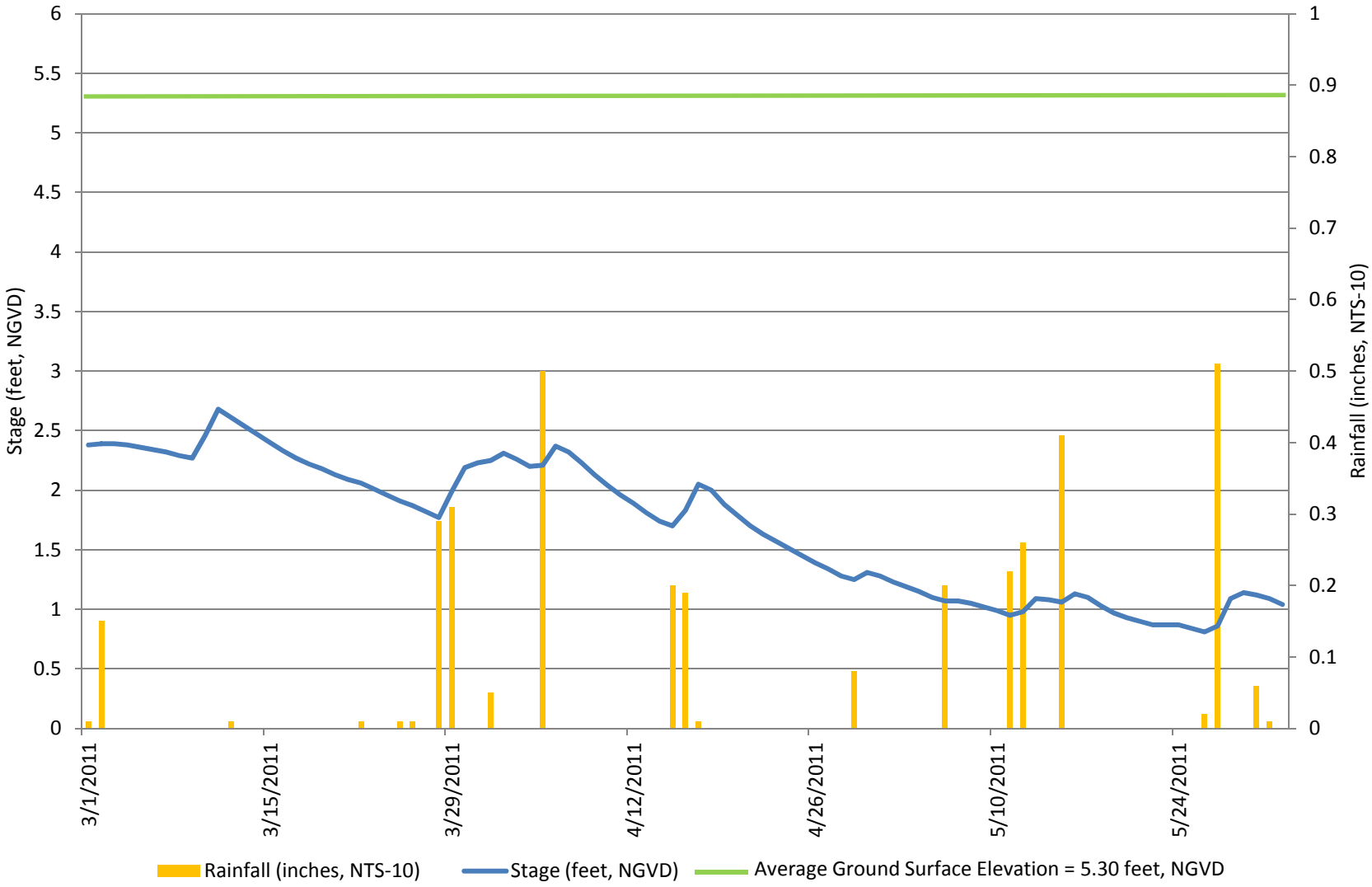

Figure 8. NTS-10 stage (feet, NGVD) and rainfall (inches) between March 1 and June 1, 2011.

C. Cape Sable Seaside Sparrow Habitat: Western Marl Prairies

1. ***Reinitiation Trigger****: Fewer than 60 consecutive days with water levels below ground surface at NP-205 between March 1 and July 15 due to water releases in 2 consecutive years.*

Table 8. Dates that water depths were less than 6.0 feet, NGVD at NP-205 and the number of consecutive dry days at NP-205 during the CSSS nesting window of March 1 and July 15.

Year	Start Date NP-205 < 6.0 feet, NGVD	End Date NP-205 < 6.0 feet, NGVD	Number of Consecutive Days Dry	Number of Consecutive Days Dry (March 1 to July 15)
2011	01/01/11	06/26/11	176	117

2. ***ITS Exceeded:*** *No*

3. ***Reinitiation Required:*** *No*

4. ***Conclusion:*** *As shown in Figure 9, S-12A closed November 1 as per 2006 IOP, which is the most current operational plan for WCA-3-Everglades National Park-South Dade Conveyance System. IOP was designed to protect the CSSS to the maximum extent possible through water management operations, which resulted in closure periods for the S-12A-C, S-243A/B and S-344 structures. The purpose of closure periods was to provide an improved opportunity for nesting within CSSS-A by maintaining water levels below ground level for a minimum of 60 consecutive days between March 1 and July 15, corresponding to the CSSS breeding season.*

Due to the extreme drought conditions experienced during WY11, the S-12B, S-12C, S-343A/B and S-344 structures were actually closed prior to their IOP closure dates as per the WCA-3 Regulation Schedule. In addition, S-12D which does not have a closure period associated with CSSS protection, closed December 9, 2010, thereby further limiting flows into western Shark River Slough. S-12D was closed as per the WCA-3 Regulation Schedule due to lack of rainfall releases associated with the extreme dry conditions experienced throughout South Florida associated with La Niña. Stage data from NP-205 indicate that water was below ground surface level as early as December 14, 2010. Water levels increased slightly above ground surface for a period of 3 days (December 19-21, 2010) and then were again below ground surface level continuously between December 22, 2010 and June 26, 2011, a total of 186 days. As shown in Table 8, within the FWS-defined CSSS breeding window of March 1 through July 15, a total of 117 days of continuously dry conditions were experienced at NP-205.

As shown in Table 7, CSSS-A has not recovered under IOP operations, but has remained relatively stable since its implementation in 2002. There are several factors that influence population size including competition, predation and prey availability; recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (i.e. the Allee effect) (Boulton et al. 2009; Virzi et al. 2009). USACE has fully complied with IOP CSSS protection measures and has concluded that reinitiation is not necessary at this time.

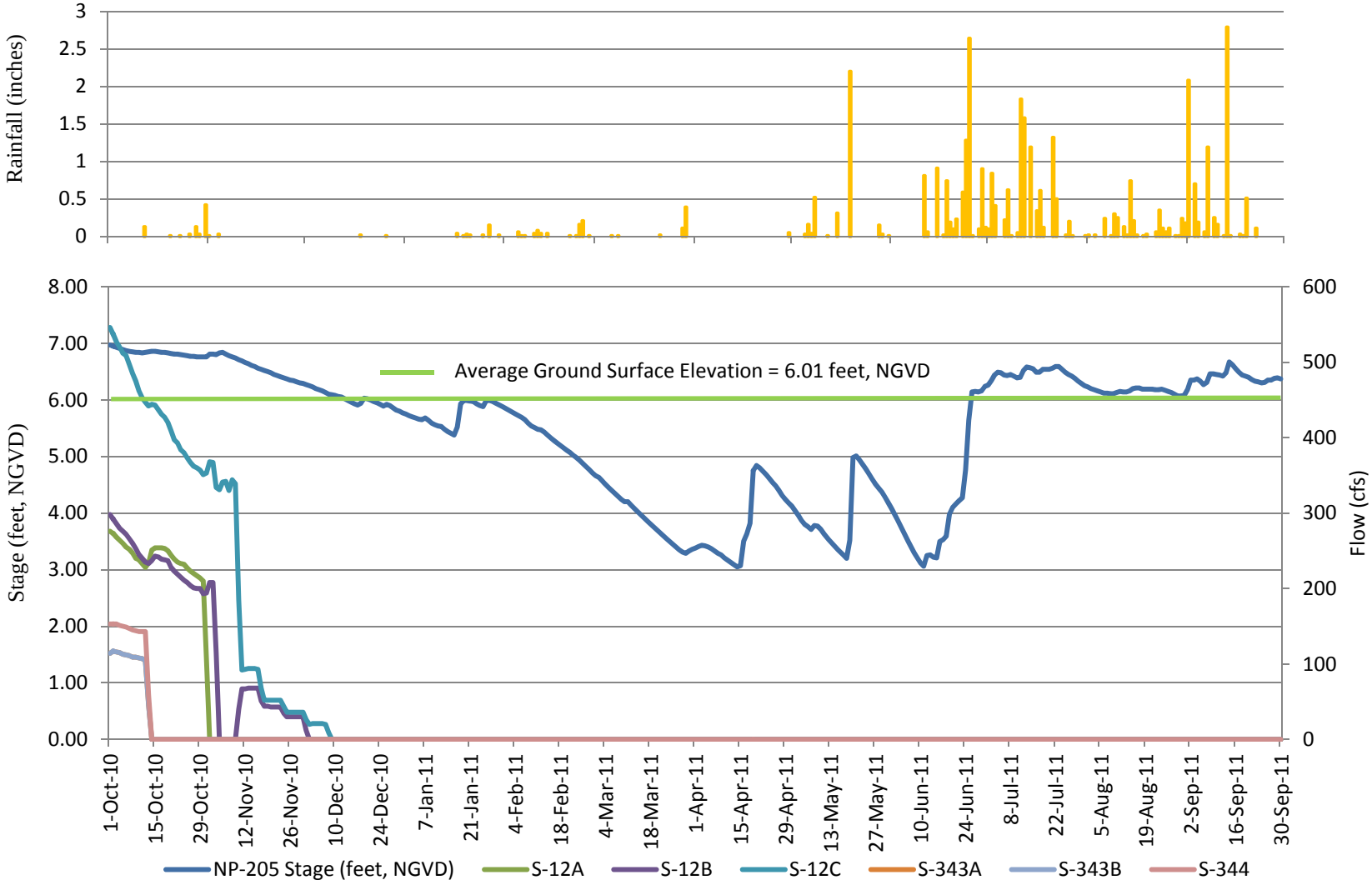

Figure 9. Water control structures S-12A-D, S-343A/B and S-344 FLOW (cfs), NP-205 stage (feet, NGVD) and NP-205 rainfall (inches) for WY11.

VI. ERTP Performance Measures and Ecological Targets

A. Cape Sable Seaside Sparrow

Performance Measure (PM)

A. NP-205 (CSSS-A): Provide a minimum of 60 consecutive days at NP-205 below 6.0 feet, NGVD beginning no later than March 15.

Table 9. Dates that water depths were less than 6.0 feet, NGVD at NP-205 and the number of consecutive dry days at NP-205 during the CSSS nesting window of March 1 through July 15, 2011.

Year	Start Date NP-205 < 6.0 feet, NGVD	End Date NP-205 < 6.0 feet, NGVD	Number of Consecutive Days Dry (NP-205 < 6.0 feet, NGVD) between March 1 and July 15
2011	3/1/2011	6/25/2011	117

A total of 117 consecutive dry days were experienced at Gauge NP-205 between March 1 and July 15, 2011, therefore, this PM was met (Table 9). Please note due to the extremely dry conditions experienced during WY11, water levels were below ground surface elevation at NP-205 starting December 14, 2010. Please refer to Section V.C. (Cape Sable Seaside Sparrow Habitat: Western Marl Prairies) for more details.

CSSS Ecological Targets (ET)

ET-1 (NP-205, CSSS-A): Strive to reach a water level of ≤ 7.0 feet, NGVD at NP-205 by December 31 for nesting season water levels to reach 6.0 feet, NGVD by mid-March.

Table 10. NP-205 water levels (feet, NGVD) on December 31, 2010.

Date	NP-205 Stage (feet, NGVD)
31-Dec-10	4.27

As shown in Table 10, the December 31, 2010 stage at Gauge NP-205 was 4.27 feet NGVD and therefore, this PM was met. Please note due to the extremely dry conditions experienced during WY11, water levels were below 7.0 feet NGVD at NP-205 since the start of WY11 (October 1, 2010).

ET-2 (CSSS): Strive to maintain a hydroperiod between 90 and 210 days (3 to 7 months) per year throughout sparrow habitat to maintain marl prairie vegetation.

Table 11. Discontinuous hydroperiod (number of days inundated) as measured at the specified gauges within each CSSS subpopulation between October 1, 2010 and September 30, 2011.

Sub-Population	Gauge	Discontinuous Hydroperiod (Days Inundated)	Within 90-210 Preferred Hydroperiod?
A	NP-205	174	Yes
	P-34	235	No
B	NP-44	94	Yes
C	E-112	153	Yes
D	EVER-4	293	No
E	NP-206	180	Yes
F	RG-2	25	No

A hydroperiod between 90 and 210 days was realized within CSSS-B, CSSS-C, CSSS-E and CSSS-A within the vicinity of Gauge NP-205 (Table 11). The hydroperiod was longer than preferred in CSSS-D and CSSS-A within the vicinity of P-34; and shorter than preferred within CSSS-F (Table 11). Figure 10 through Figure 16 depict the mean daily stage for the gauges indentified in Table 11. Figure 10 through Figure 16 were generated using EDEN and were selected to be included in order to show the median daily statistic over the past six to nineteen years (as described within each figure) to illustrate the extreme dry conditions experienced during WY11. Please also note that all of the stage elevations except EVER-4 (Figure 14) are in feet North American Vertical Datum (NAVD) 88. It is interesting to note that even during one the of the driest years on record, hydroperiods within CSSS-D and in the vicinity of Gauge P-34 within CSSS-A were still longer than preferred. This may indicate that conditions within these areas are no longer suitable to support marl prairie vegetation, the preferred habitat for CSSS. This statement is supported by recent CSSS surveys that indicate relatively few birds within CSSS-A, CSSS-D and CSSS-F.

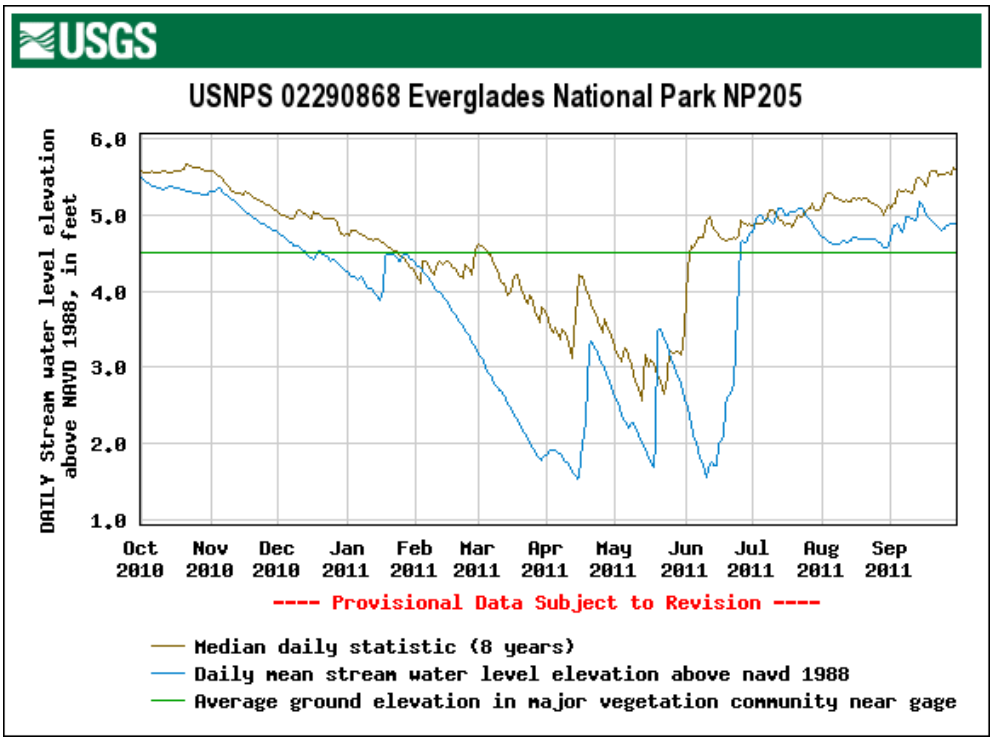

Figure 10. Daily mean stream water level at Gauge NP-205 (feet, NAVD88) for WY11.

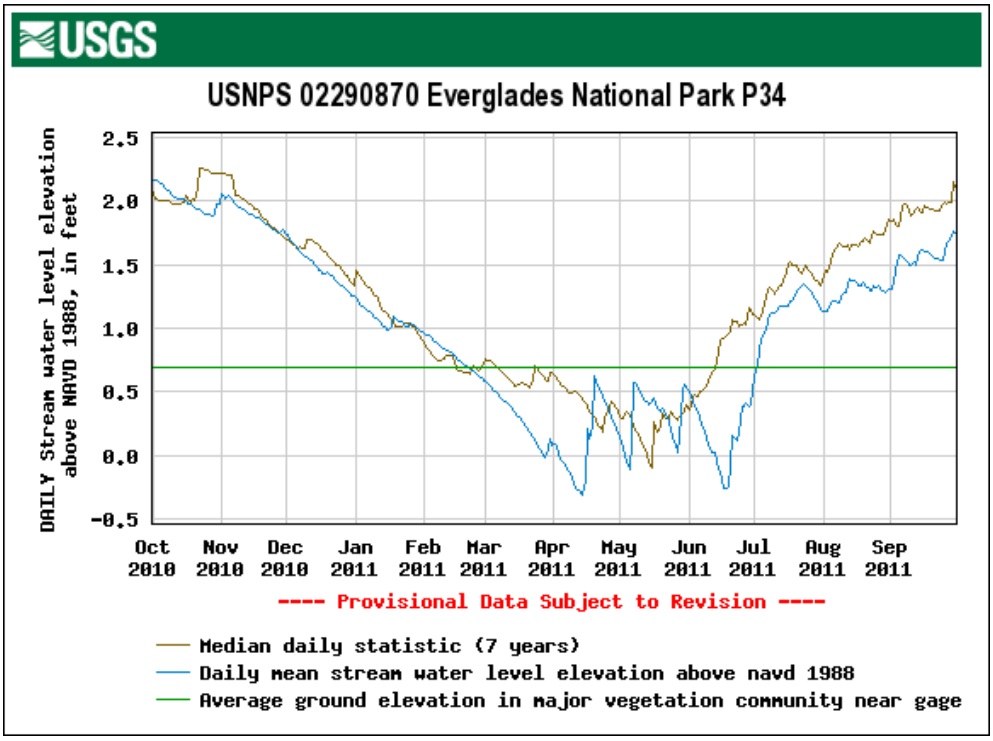

Figure 11. Daily mean stream water level at Gauge P-34 (feet, NAVD88) for WY11.

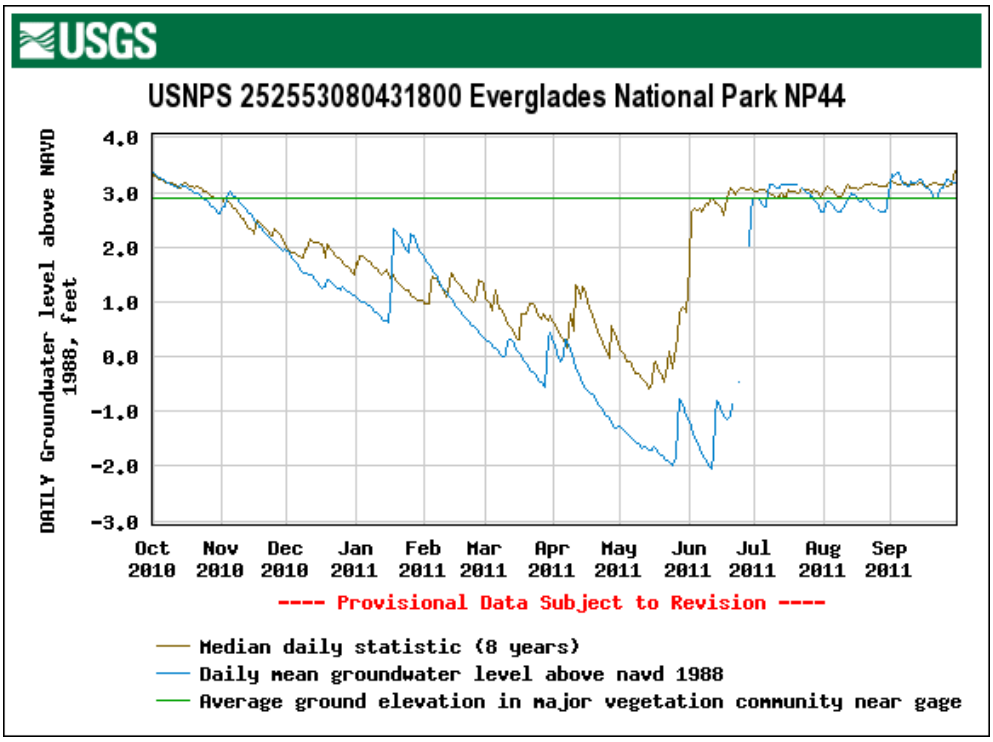

Figure 12. Daily mean groundwater level at Gauge NP-44 (feet, NAVD88) for WY11.

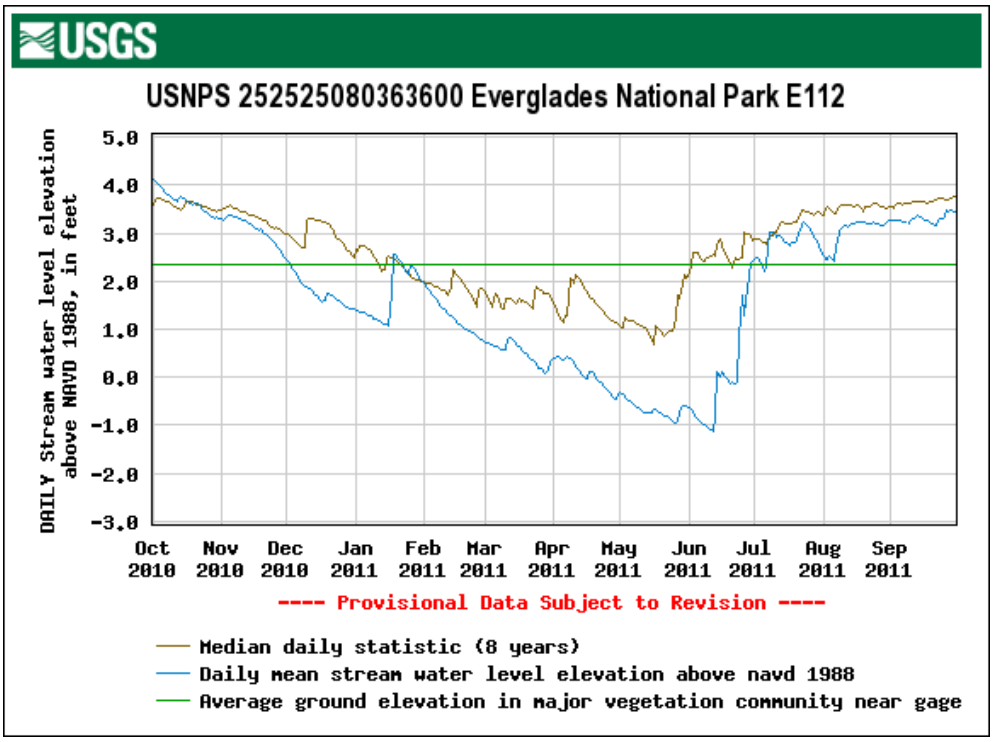

Figure 13. Daily mean stream water level at Gauge E-112 (feet, NAVD88) for WY11.

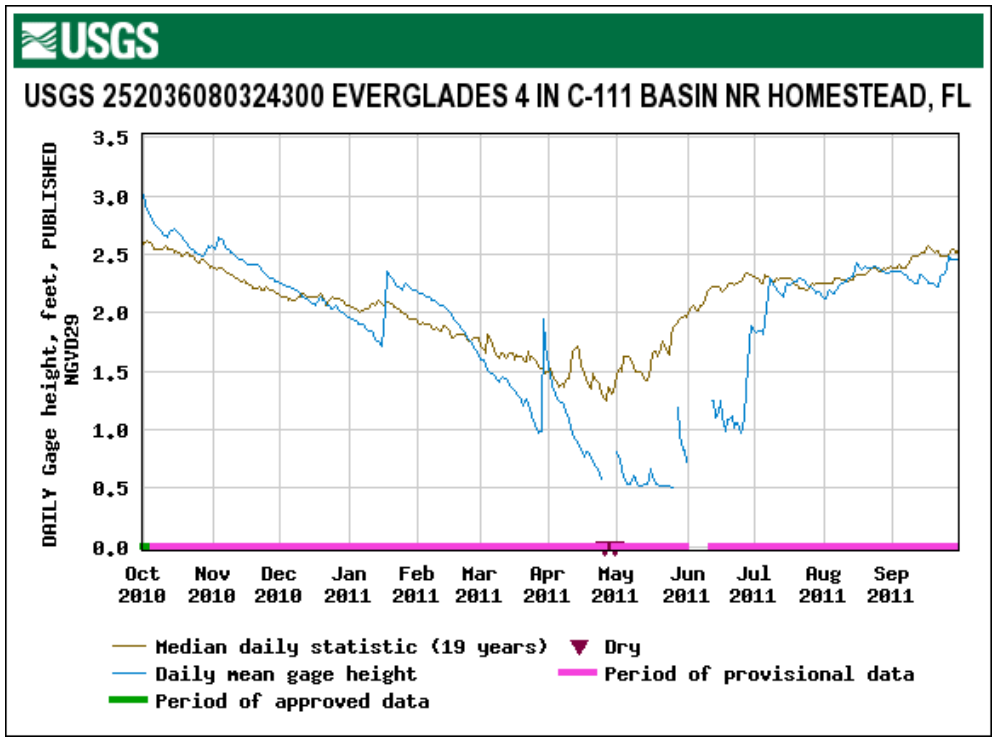

Figure 14. Daily mean gauge height Gauge EVER-4 (feet, NGVD) for WY11.

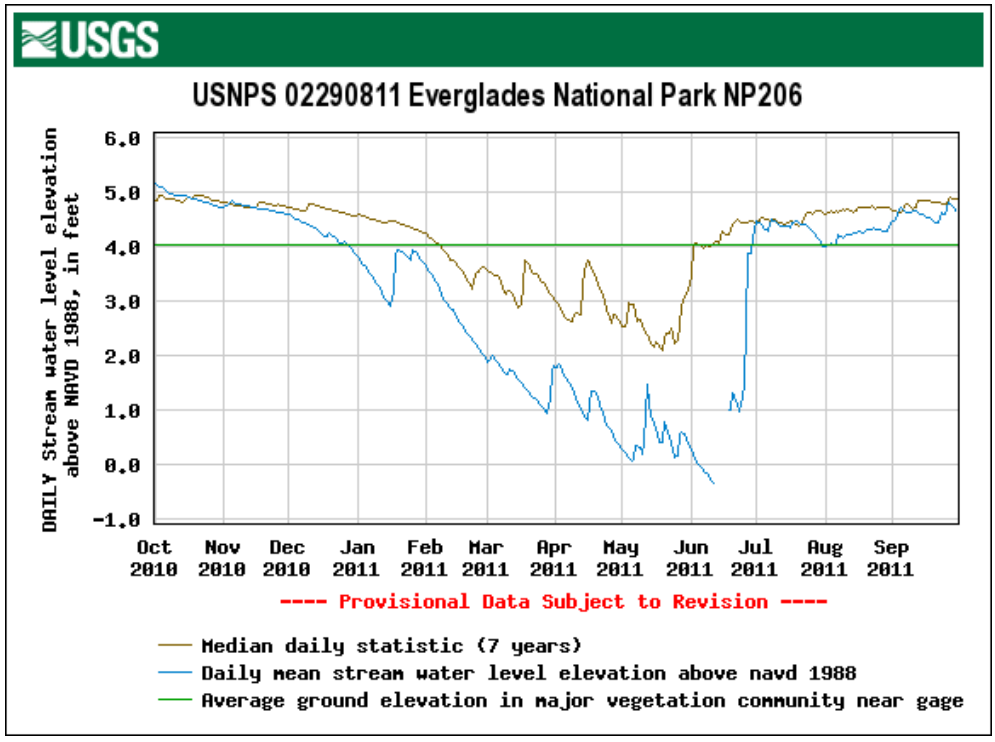

Figure 15. Daily mean stream water level at Gauge NP-206 (feet, NAVD88) for WY11.

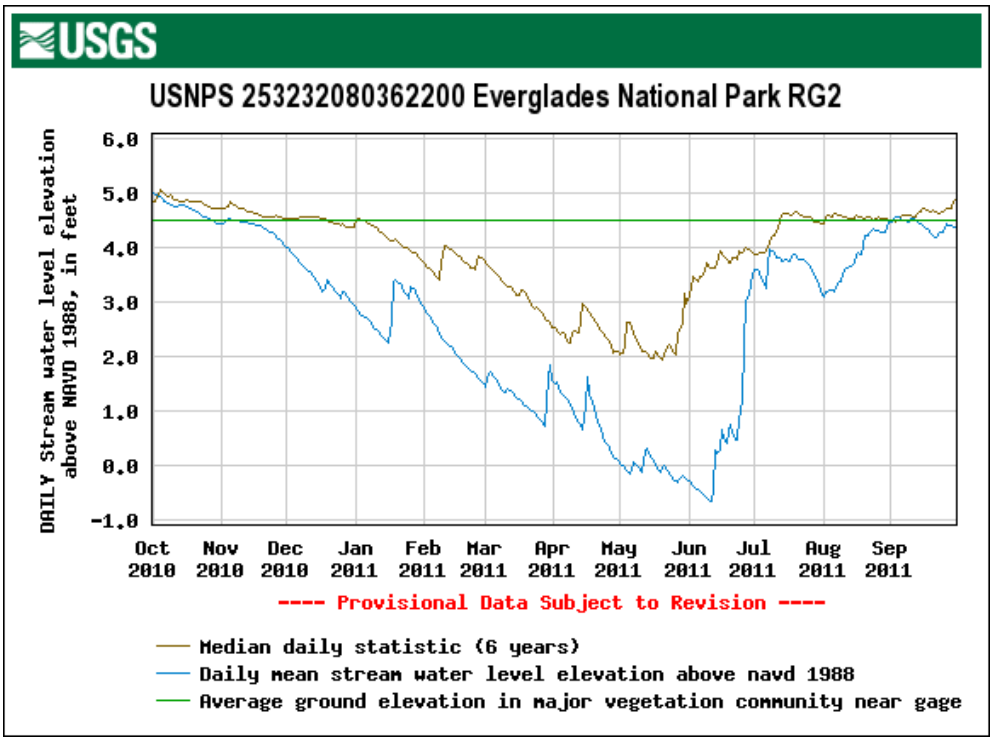

Figure 16. Daily mean stream water level at Gauge RG-2 (feet, NAVD88) for WY11.

B. Everglade Snail Kite

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Site 63, 64, 65])

Performance Measures

B. WCA-3A: For snail kites, strive to reach waters levels between 9.8 and 10.3 feet, NGVD by December 31, and between 8.8 and 9.3 feet, NGVD between May 1 and June 1.

Table 12. WCA-3AVG water levels (feet, NGVD) on December 31, 2010 and the maximum and minimum water levels between May 1 and June 1, 2011.

Year	Total Annual Precipitation (inches; WCA-3A Radar)	WCA-3AVG Stage (feet, NGVD) December 31	Minimum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)	Maximum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)
2010	-	9.57	-	-
2011	37.33*	-	7.66	8.12

* Note: Precipitation data for September 2011 are not yet available; therefore, total precipitation is limited to October 1, 2010 through August 31, 2011. Total precipitation will be updated once the data become available.

As shown in Table 12, water levels on December 31 and between May 1 and June 1 were lower than preferred during WY11 and can be attributed to the extreme dry conditions experienced throughout the region. As previously discussed within Section III.C.1. (Rapid Recession Rates and Amplitude), USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession rates experienced during the 2011 dry season (i.e. January 1 through June 1 2011) and how future operations can avoid exceeding these thresholds. The review considered water management operations including releases through the WCA-3A outlet structures, evapotranspiration rates and WCA-3A inflows (e.g. rainfall). A spreadsheet analysis was employed to calculate the effect of S-333 water supply releases on WCA-3A stage. The results of this analysis are contained within Section III.C.1. (Rapid Recession Rates and Amplitude). Figure 3 illustrates precipitation amounts along with S-333 and S-12 releases throughout the period between January 1 and May 31, 2011. As a result of this retrospective review, USACE has determined that the rapid recession rates experienced throughout this period were not a direct result of water management actions, but rather due to the extremely high evapotranspiration rates associated with a strong La Niña and widespread drought conditions.

Since the majority of WCA-3A outlet structures (i.e. S-12A-D, S343A/B and S-344) were closed during this period, S-333 was opened to meet Lower East Coast water supply demands (as permitted by WCA-3A Regulation Schedule), and rapid recession rates were attributed to extremely high evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future. La Niña conditions similar to those experienced during 2011 are predicted for the 2012 dry season, therefore, if such conditions are realized, it is highly likely that the established thresholds will again be exceeded.

C. WCA-3A: For apple snails, strive to reach water levels between 9.7 and 10.3 feet, NGVD by December 31 and between 8.7 and 9.7 feet, NGVD between May 1 and June 1.

Table 13. WCA-3AVG water levels (feet, NGVD) on December 31, 2010 and the minimum and maximum water levels between May 1 and June 1, 2011.

Year	Total Annual Precipitation (inches; WCA-3A Radar)	WCA-3AVG Stage (feet, NGVD) December 31	Minimum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)	Maximum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)
2010	-	9.57	-	-
2011	37.33*	-	7.66	8.12

* Note: Precipitation data for September 2011 are not yet available; therefore, total precipitation is limited to October 1, 2010 through August 31, 2011. Total precipitation will be updated once the data become available.

Water levels on December 31 and between May 1 and June 1 were lower than preferred during WY11 and can be attributed to the extreme dry conditions experienced throughout the region (Table 13). Please refer to Section III.C.1. (Rapid Recession Rates and Amplitude) and Section IV.B, PM-B for further details.

D. WCA-3A (Dry Season Recession Rate): Strive to maintain a recession rate of 0.05 feet per week from January 1 to June 1 (or onset of the wet season). This equates to a stage difference of approximately 1.0 feet between January and the dry season low.

Table 14. Observed weekly recession rate from January 1 through June, 2011 based upon WCA-3AVG. Positive values indicate falling water, negative values indicate rising water.

Week Ending	Recession Rate (feet per week)	Week Ending	Recession Rate (feet per week)
7-Jan	0.07*	25-Mar	0.12
14-Jan	0.08	1-Apr	0.16
21-Jan	0.01	8-Apr	0.11
28-Jan	NA	15-Apr	0.15
4-Feb	0.10	22-Apr	0.17
11-Feb	0.02	29-Apr	0.17
18-Feb	0.06	6-May	0.16
25-Feb	0.06	13-May	0.06
4-Mar	0.08	20-May	-0.01
11-Mar	0.07	27-May	0.16
18-Mar	0.10	3-Jun	0.20

* Note: Numbers are highlighted to correspond to FWS Multi-Species Transition Strategy (MSTS) stoplight key below (FWS 2010).
NA: Missing Data 1/21-1/25 at Gauge 3A-4

FWS 2010 Key:

FWS MSTS Recession Rate (feet per week)
> .10
> 0.05 but ≤ 0.10
0.05
≥ 0.00 but < 0.05
< 0.00

Table 15. Observed WCA-3A stage difference from January 1 through June 1, 2011 based upon the WCA-3AVG and Gauge 3A-28. Values greater than 1.0 represent stages differences that were greater than recommended between January and June 1.

Year	WCA-3A Stage Difference January 1 to June 1 (WCA-3AVG)
2011	1.90

As shown in Table 14 and Table 15, both recession rates and the dry season stage difference were greater than preferred during January 1 through June 1 2011. Please refer to Section III.C.1. (Rapid Recession Rates and Amplitude) and Section IV.B, PM-B for further details.

E. WCA-3A (Wet Season Rate of Rise): Manage for a monthly rate of rise ≤0 .25 feet per week to avoid drowning of apple snail egg clusters.

Table 16. Weekly rate of rise (feet/week) based on the WCA-3AVG for the months of February through September, 2011. Positive values indicate falling water, negative values indicate rising water.

Year	Average Weekly Rate of Rise (feet/week) based upon WCA-3AVG stage							
	February	March	April	May	June	July	August	September
2011	0.08	0.06	0.16	0.10	-0.23	-0.08	-0.15	-0.09

Table 16 indicates that he average weekly rate of rise did not exceed 0.25 feet per week during the months of February through September 2011; therefore, PM-E was achieved.

Ecological Target

ET-3. WCA-3A (Dry Years): Strive to maintain optimal snail kite foraging habitat by allowing water levels to fall below ground surface level between 1 in 4 and 1 in 5 years (208-260 weeks average flood duration) between May 1 and June 1 to promote regenerations of marsh vegetation. Do not allow water levels below ground surface for more than 4 to 6 weeks to minimize adverse effects on apple snail survival.

Table 17. Number of days during May 1 to June 1 in which water levels were below ground surface level as measured at Gauge 3A-3 (Site 63), 3A-4 (Site 64) and 3A-28(Site 65).

Year	Gauge 3A-3	Gauge 3A-4	Gauge 3A-28
2011	32	32	0

As shown in Table 17, water levels fell below ground surface elevation for 32 days at Gauge 3A-3 and Gauge 3A-4 during the May 1 to June 1, 2011 time period. As shown in Figure 17, due to the extreme drought conditions, water levels were below ground surface elevation for extended periods during WY11 in WCA-3A. As a result it is likely that apple snail egg production and survival were affected throughout large areas in WCA-3A. As per the ERTP BO, in July 2011, USACE contracted Phillip Darby, Ph.D to monitor apple snails within WCA-3A. Further information concerning apple snail population estimates will be available in the future as a result of Dr. Darby's efforts.

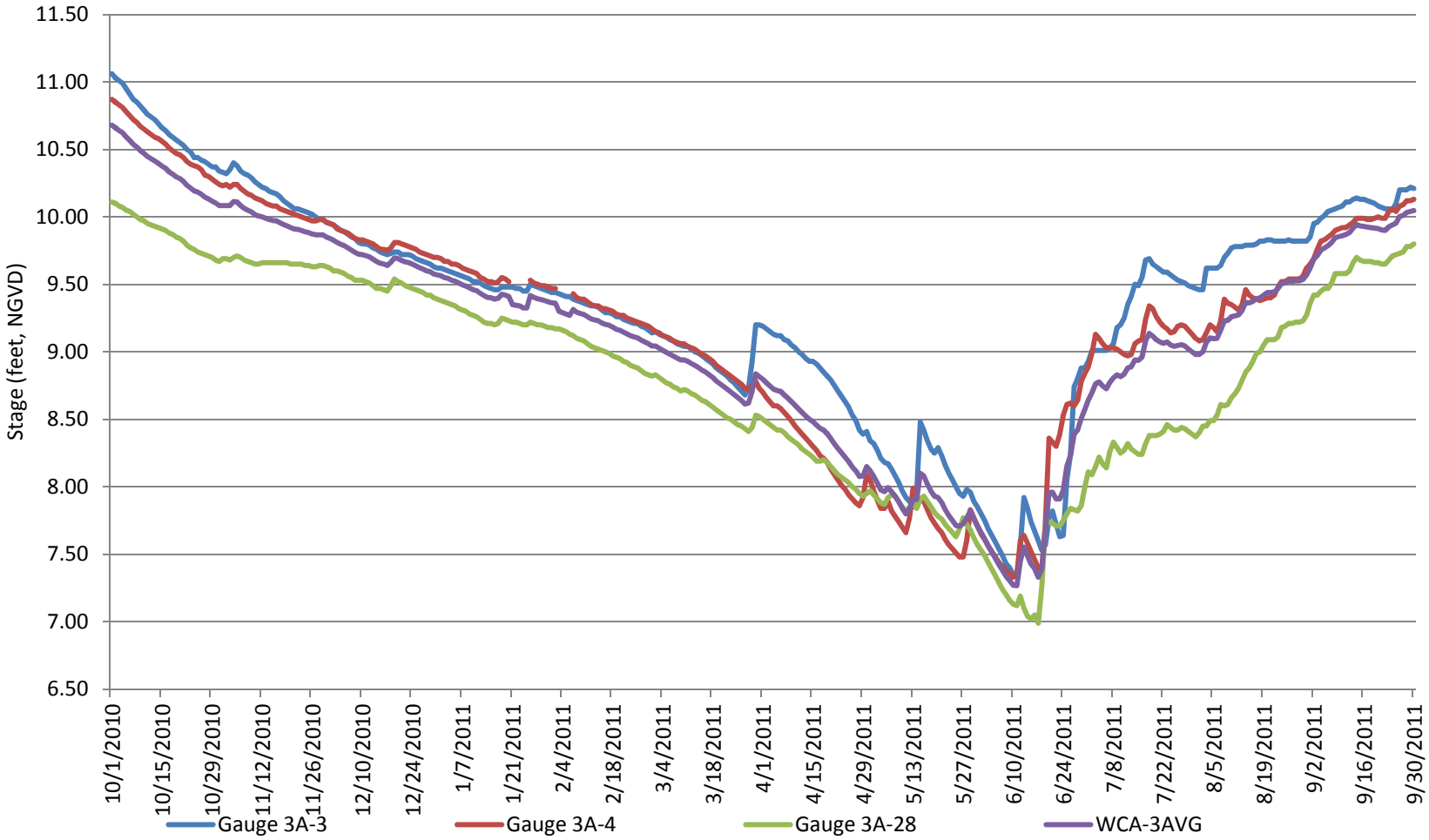

Figure 17. WCA-3A Stage (feet, NGVD) as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and WCA-3AVG (average of Gauges 3A-3, 3A-4 and 3A-28) during WY11.

C. Wood Stork and Wading Birds

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Sites 63, 64, 65])

Performance Measures

F. WCA-3A Dry Season Recession Rate: Recession rate of 0.07 feet per week, with an optimal range of 0.06 to 0.07 feet per week, from January 1 to June 1.

Table 18. Observed weekly recession rate from January 1 through June 1, 2011 based upon WCA-3AVG.

Week Ending	Recession Rate (feet per week)	Week Ending	Recession Rate (feet per week)
7-Jan	0.07	25-Mar	0.12
14-Jan	0.08	1-Apr	0.16
21-Jan	0.01	8-Apr	0.11
28-Jan	NA	15-Apr	0.15
4-Feb	0.10	22-Apr	0.17
11-Feb	0.02	29-Apr	0.17
18-Feb	0.06	6-May	0.16
25-Feb	0.06	13-May	0.06
4-Mar	0.08	20-May	-0.01
11-Mar	0.07	27-May	0.16
18-Mar	0.10	3-Jun	0.20

* Note: Numbers are highlighted to correspond to FWS MSTS stoplight key below (FWS 2010).
NA: Missing Data 1/21-1/25 at Gauge 3A-4

FWS 2010 Key:

FWS MSTS Recession Rate (feet per week)
< 0.17
> 0.07 but ≤ 0.17
Preferred 0.06-0.07
≥ -0.05 but < 0.06
< -0.05

Recession rates for wood storks and wading birds, particularly within the early dry season were within, or near the preferred range (Table 18); however, as the dry season progressed recession rates became faster than preferred. As shown in Table 13, water levels on December 31 and between May 1 and June 1 were lower than preferred during WY11 and can be attributed to the extreme dry conditions experienced throughout the region. As previously discussed within Section III.C.1. (Rapid Recession Rates and Amplitude), USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession rates experienced during the 2011 dry season (i.e. January 1 through June 1 2011) and how future operations can avoid exceeding these thresholds. The review considered water management operations including releases through the WCA-3A outlet structures, evapotranspiration rates and WCA-3A inflows (e.g. rainfall). A spreadsheet analysis was employed to calculate the effect of S-333 water supply releases on WCA-3A stage. The results of this analysis are contained within Section III.C.1. (Rapid Recession Rates and Amplitude). Figure 3 illustrates precipitation amounts along with S-333 and S-12 releases throughout the period between January 1 and May 31, 2011. As a result of this retrospective review, USACE has determined that the rapid recession rates experienced throughout this period were not a direct result of water management actions, but rather due to the extremely high evapotranspiration rates associated with a strong La Niña and widespread drought conditions.

Since the majority of WCA-3A outlet structures (i.e. S-12A-D, S343A/B and S-344) were closed during this period, S-333 was opened to meet Lower East Coast water supply demands (as permitted by WCA-3A Regulation Schedule), and rapid recession rates were attributed to extremely high evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future. La Niña conditions similar to those experienced during 2011 are predicted for the 2012 dry season, therefore, if such conditions are realized, it is highly likely that the established thresholds will again be exceeded.

G. WCA-3A (Dry Season): Strive to maintain areas of appropriate foraging depths (5-25 cm) within the Core Foraging Area (18.6 mile radius, CFA) of any active wood stork colony.

In order to assess Water Year 2011 (WY11) in relation to Performance Measure G (PM-G), an analysis of wood stork foraging water depths in WCA-3 was performed for the time period of October 1, 2010 through September 30, 2011. The following information regarding wood stork colonies, locations, gauges and foraging depths was provided by Lori Miller (FWS, 2010). All data used herein were obtained from EDEN; all data is considered provisional and subject to change, unless otherwise noted.

Wood storks are known to forage in a 360-degree radius of 30 km (18.6 statute miles) from an active colony (FWS 2010; Cox et al. 1994). The optimal water depth for wood storks is 14-15 cm with suboptimal dry water depths ranging from -9 to 4 cm and suboptimal wet water depths ranging from 26 to 40 cm (FWS 2010; Beerens and Cook,

unpublished report 2010). Table 19 lists wood stork colonies with core foraging area (CFA) extending into WCA-3A and WCA-3B. Colony locations and CFAs are depicted in Figure 18.

Table 19. Wood stork colonies with Core Foraging Areas (CFAs) in WCA-3.

COLONY	COUNTY	LAST ACTIVE	2011 NESTING PAIRS	LATITUDE	LONGITUDE
2B Melaleuca	Broward	2001	0	26.163	-80.348
Crossover	Miami-Dade	2009	0	25.925	-80.835
Jetport	Miami-Dade	2009	0	25.885	-80.844
Jetport South	Miami-Dade	2011	350	25.805	-80.849
3B Mud East	Miami-Dade	2009	0	25.798	-80.494
Tamiami Trail East	Miami-Dade	2010	0	25.758	-80.508
Tamiami Trail East 2	Miami-Dade	2010	0	25.760	-80.508
Tamiami Trail West	Miami-Dade	2011	200	25.760	-80.545
Grossman Ridge West*	Miami-Dade	2011	NA	25.636	-80.653

* No data for this colony is available at this time. USACE contacted FWS on October 5, 2011 to obtain the data, however, FWS, did not yet have the information.

Table 20 lists gauges analyzed for wood stork CFA within WCA-3A and WCA-3B using elevations obtained through EDEN. Gauge locations are depicted in Figure 19. Table 21 identifies the gauges that are included within the CFA of each active wood stork colony. Please note that although PM-G is specific to active wood stork colonies, the water depth analysis performed within this section examines water depths at each potential colony site listed within Table 19 to determine whether water depths would have been within the appropriate foraging range for the species.

Table 20. Gauges analyzed for wood stork CFA water depths.

GAUGE	DESCRIPTION
3A3 (Site 63)	Northeastern WCA-3A
3A4 (Site 64)	Central WCA-3A
3ASW	West-central WCA-3A
3A28 (Site 65)	Southern WCA-3A
3B2 (Site 71)	Central WCA-3B
3BS1W1	Southeastern WCA-3B

Figure 18. Location of wood stork colonies and gauges used for evaluation of PM-G. Circles represent the CFA of the colony.

Table 21. List of gauges that occur within the CFA of the identified wood stork colonies.

	GAUGE									
COLONY	3A3	3A4	3ASW	3A28	3B2	3BS1W1	NE-1	NP-203	NP-205	NP-206
Tamiami East		X		X	X	X	X	X		X
Tamiami East 2		X		X	X	X	X	X		X
Tamiami West (NESRS)		X		X	X	X	X	X		X
2B Melaleuca	X									
Crossover (WCA-3A)		X	X	X	X				X	
Jetport (WCA-3A)		X	X	X	X				X	
Mud East (WCA-3B)		X		X	X	X	X	X		X
Jetport South (WCA-3A)		X	X	X	X		X		X	
Grossman's Ridge West				X	X	X	X	X	X	X

The wood stork analysis employed daily stage data for the gauges listed in Table 20 in feet NGVD29. Water depths were obtained by subtracting the average ground elevations (obtained from EDEN and converted to NGVD29) from the daily stage in feet NGVD29. Water depths were then converted to centimeters by multiplying values by 30.48 (30.48 cm = 1 foot). These water depths, now in centimeters, were then used to graph daily foraging

depths in Microsoft Excel. On these graphs, the red-yellow-green light method was used to illustrate WY11 water depths. Table 22 illustrates the values used for the red-yellow-green light method. Graphs for gauges within WCA-3 are included within this document as Figure 19 and Figure 20.

Table 22. Foraging water depths in centimeters using the Red-Yellow-Green light method (red = undesirable/unavailable, yellow = suboptimal and green = optimal).

Water Depth (centimeters)
< -9 cm
-9 to 4 cm
5 to 25 cm
26 to 40 cm
> 40 cm

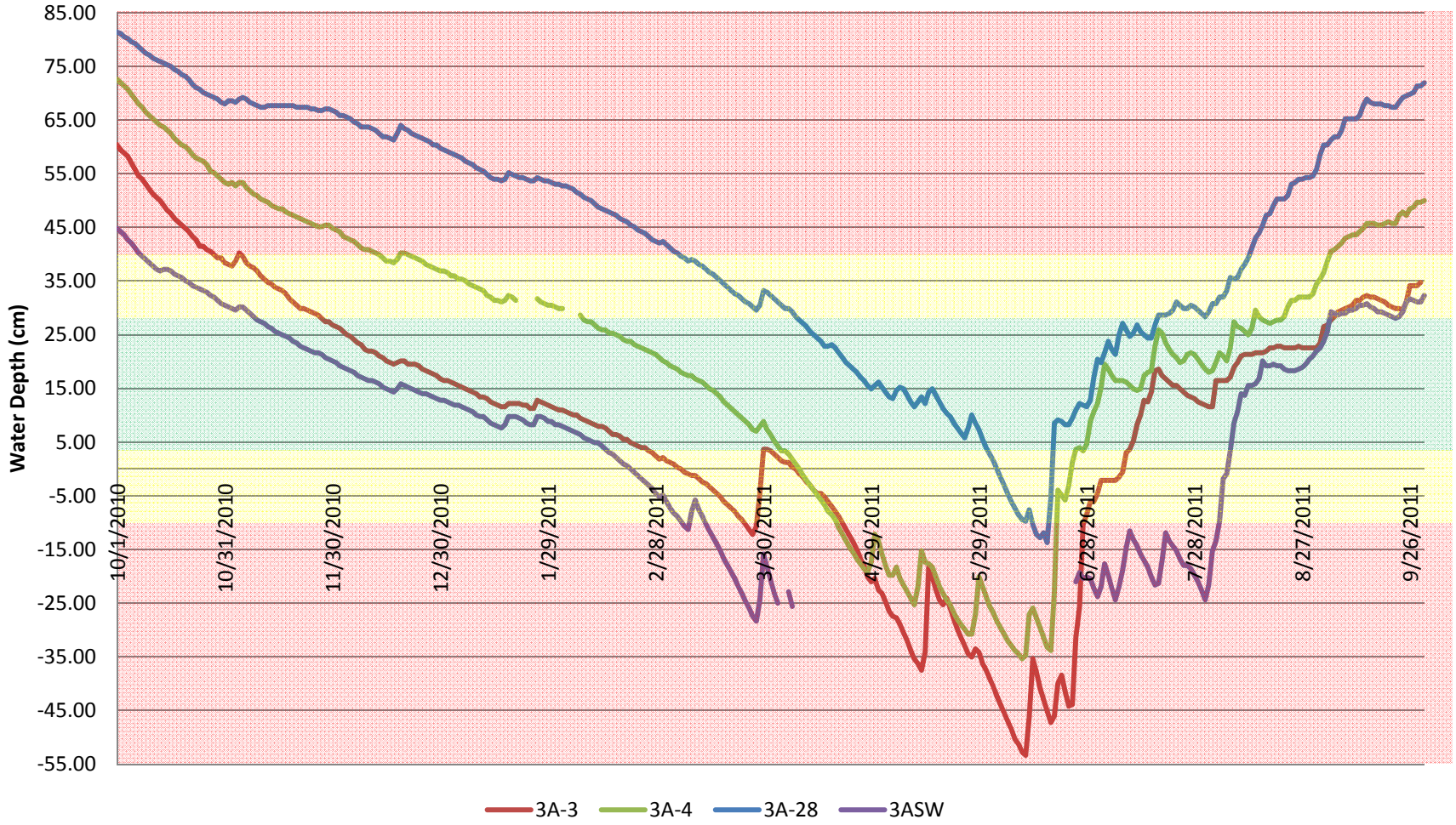

Figure 19. Wood stork foraging depths within WCA-3A as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and Gauge 3ASW.

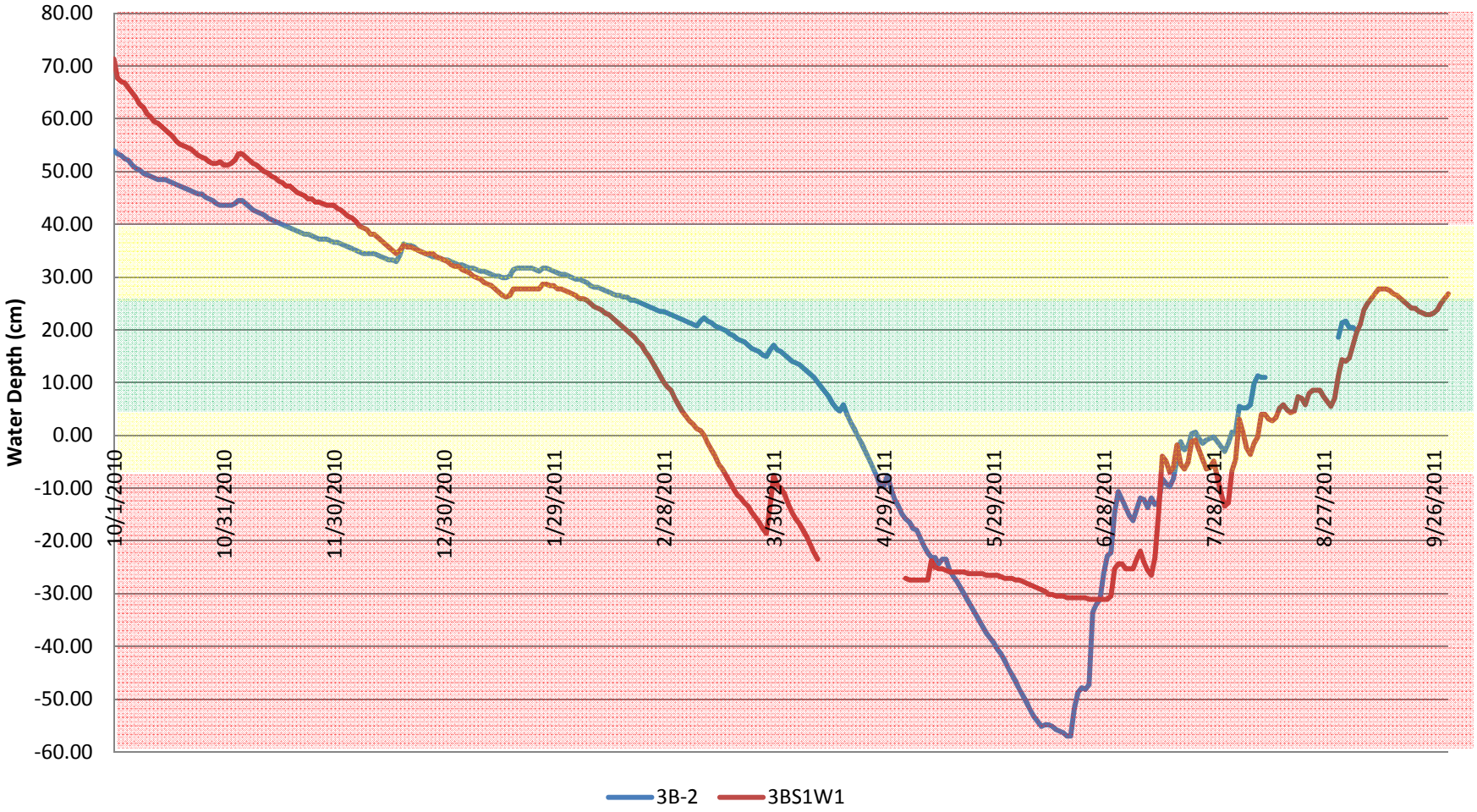

Figure 20. Wood stork foraging depths with WCA-3B as measured at Gauge 3B-2 and Gauge 3BS1W1.

As illustrated in Figure 19, suitable water depths for wood stork foraging within WCA-3A were available throughout much of WY11. Between November 2010 and February 2011, suitable foraging depths were available in the area around Gauge 3A-3 and Gauge 3ASW, after which time, water depths dropped below suitable levels. Suitable depths were again experienced in these areas later in WY11 (i.e. mid-July at Gauge 3A-3 and mid-August at Gauge 3ASW). As these areas experienced less than optimal foraging conditions, other areas within WCA-3A became available. Water depths were within the optimal depth range between February and mid-April at Gauge 3A-4 and between April and May around Gauge 3A-28. Water depths in June were below optimal conditions at all four gauges within WCA-3A and throughout the period from mid-April through August in WCA-3B (Figure 20).

A mid-season report from Peter Frederick, Ph.D. documenting wood stork and wading bird nesting during 2011 is provided within Appendix B. Dr. Frederick's report suggests that the 2011 season was only marginally successful for storks, with about the same number of nest starts as the ten-year average, but poorer nest success than usual. Poor nest success may be attributed to extreme dry conditions experienced throughout the latter portion of the season. For further information regarding water management activities during the wood stork breeding season, please refer to Section III.C.1 (Rapid Recession Rates and Amplitude).

H. WCA-3A (Dry Season): Strive to maintain areas of appropriate foraging depths (5-15 cm) within the Core Foraging Area (7 to 9 mile radius) of any active white ibis or snowy egret colony.

In order to assess Water Year 2011 (WY11) in relation to Performance Measure H (PM-H), an analysis of white ibis foraging water depths in WCA-3 was performed for the time period of October 1, 2010 through September 30, 2011. The following information regarding white ibis colonies, locations, gauges and foraging depths was provided by Lori Miller (FWS, 2010). All data used herein were obtained from EDEN, all data is considered provisional and subject to change, unless otherwise noted.

White ibis are known to forage in a 360-degree radius of 10 km (6.2 statute miles) from an active colony (FWS 2010; Bancroft et al. 1994). The optimal water depth for white ibis foraging in WCA-3 is 7-16 cm with suboptimal dry water depths ranging from -15 to 6 cm and suboptimal wet water depths ranging from 17 to 31 cm (FWS 2010, Beerens 2008). Table 23 lists active white ibis colonies with CFAs extending into WCA-3 from 2002 through 2010. Colony locations and CFAs are depicted in Figure 21.

Table 23. Number of active white ibis nests in the ERTP action area as reported by the South Florida Wading Bird Reports from 2002 through 2010.

COLONY	2002	2003	2004	2005	2006	2007	2008	2009	2010
Tamiami West	400	150		500	600	400		5,000	
3B Mud East		122	1,153		203				
6th Bridge						10,661	1,000		124
Alley North	20,000	6,033	16,000	12,750	13,566	8		17,200	500
Anhinga Alley									
Big Melaleuca									
Big Pond									
Cypress City						200			
East Central Ag									
Ganga								9	
Heron Alley									
L-67					16				
Pocket									
Unnamed 2			56						
West Ag Canal									
West Central Ag									
Total	20,400	6,305	17,209	13,250	14,385	11,269	1,000	22,209	624

Table 24 lists gauges analyzed for white ibis CFA within WCA-3A and WCA-3B using elevations obtained through EDEN. Gauge locations are depicted in Figure 21. Table 25 identifies the gauges that are included within the CFA of each active white ibis colony. Please note that although PM-H is specific to active white ibis colonies, the water depth analysis performed within this section examines water depths at each potential colony site listed within Table 23 to determine whether water depths would have been within the appropriate foraging range for the species.

Table 24. Gauges analyzed for white ibis CFA water depths.

GAUGE	DESCRIPTION
3A3 (Site 63)	Northeastern WCA-3A
3A4 (Site 64)	Central WCA-3A
3ASW	West-central WCA-3A
3A28 (Site 65)	Southern WCA-3A
3B2 (Site 71)	Central WCA-3B
3BS1W1	Southeastern WCA-3B

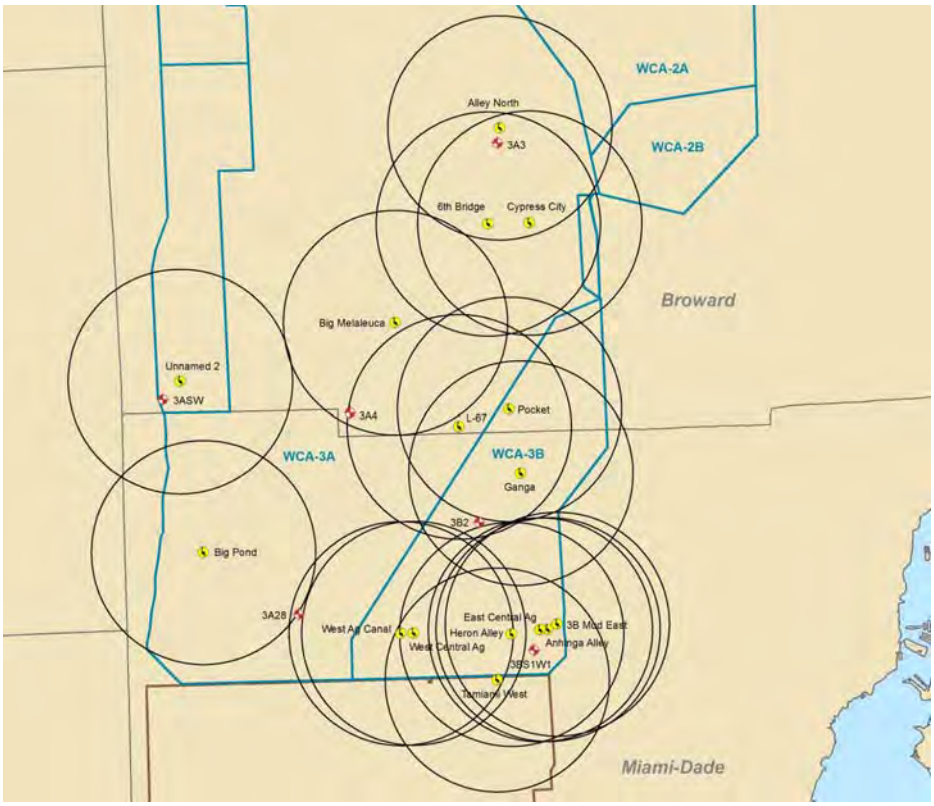

Figure 21. Location of white ibis colonies and gauges used for evaluation of PM-H. Circles represent the CFA of the colony.

Table 25. List of gauges that occur within the CFA of the identified white ibis colonies.

COLONY NAME	GAUGE					
	3A3	3A4	3ASW	3A28	3B2	3BS1W1
Tamiami West (NESRS)						X
Mud East (WCA-3B)					X	X
6th Bridge	X					
Alley North	X					
Anhinga Alley					X	X
Big Melaleuca		X				
Big Pond				X		
Cypress City	X					
East Central Ag					X	X
Ganga					X	
Heron Alley					X	X
L-67		X			X	
Pocket					X	
Unnamed 2			X			
West Ag Canal				X		X
West Central Ag				X	X	X

The white ibis analysis employed daily stage data for the gauges listed in Table 24 in feet NGVD29. Water depths were obtained by subtracting the average ground elevations (obtained from EDEN and converted to NGVD29) from the daily stage in feet NGVD29. Water depths were then converted to centimeters by multiplying values by 30.48 (30.48 cm = 1 foot). These water depths, now in centimeters, were then used to graph daily foraging depths in Microsoft Excel. On these graphs, the red-yellow-green light method was used to illustrate WY11 water depths. Table 26 illustrates the values used for the red-yellow-green light method. Graphs for gauges within WCA-3 are included within this document as Figure 22 and Figure 23.

Table 26. Foraging water depths in centimeters using the Red-Yellow-Green light method (red=undesirable/unavailable, yellow=suboptimal and green=optimal).

Water Depth (centimeters)
<-16 cm
-15 to 6 cm
7 to 16 cm
17 to 31 cm
>32 cm

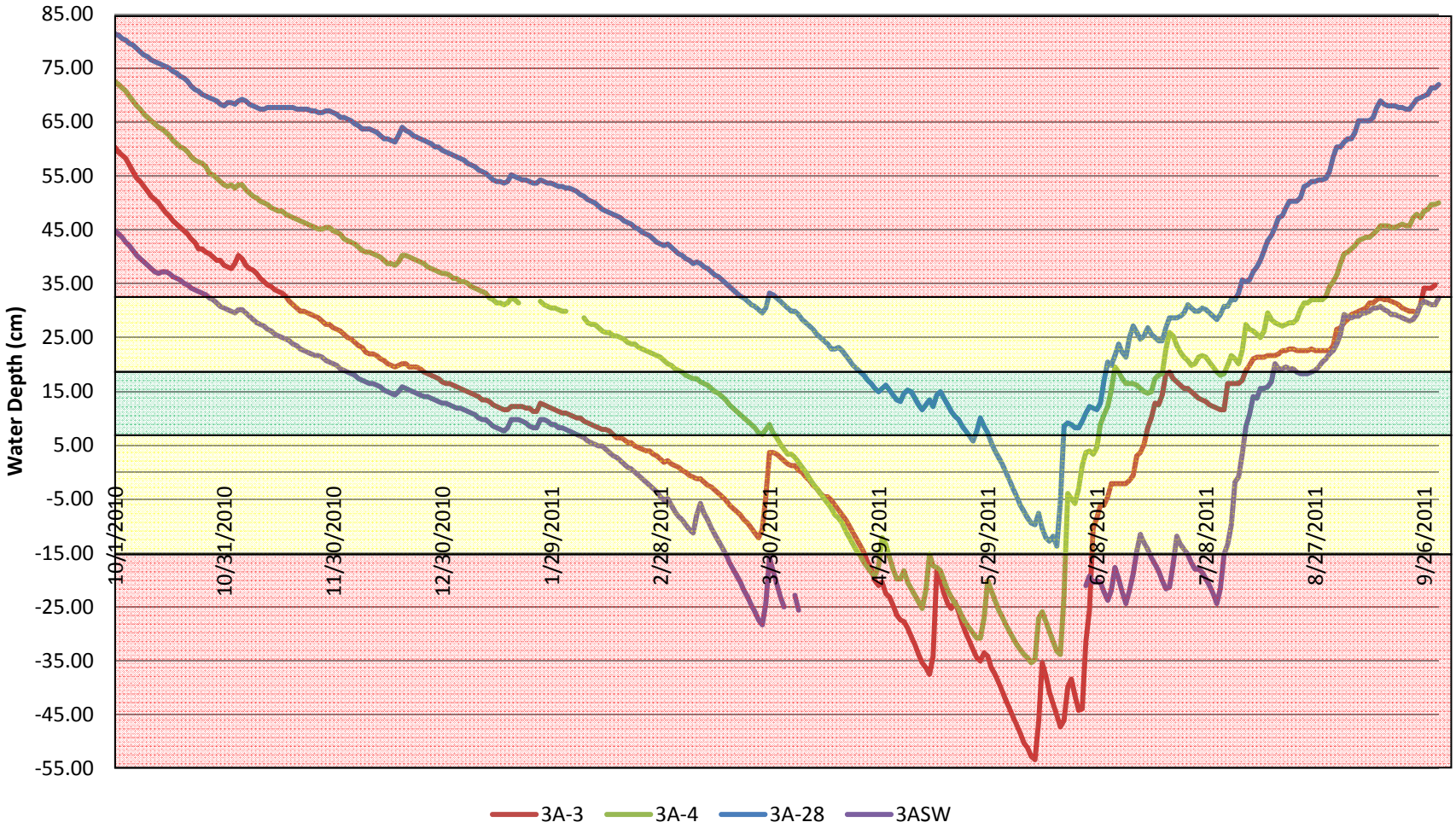

Figure 22. White ibis foraging depths within WCA-3A as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and Gauge 3ASW.

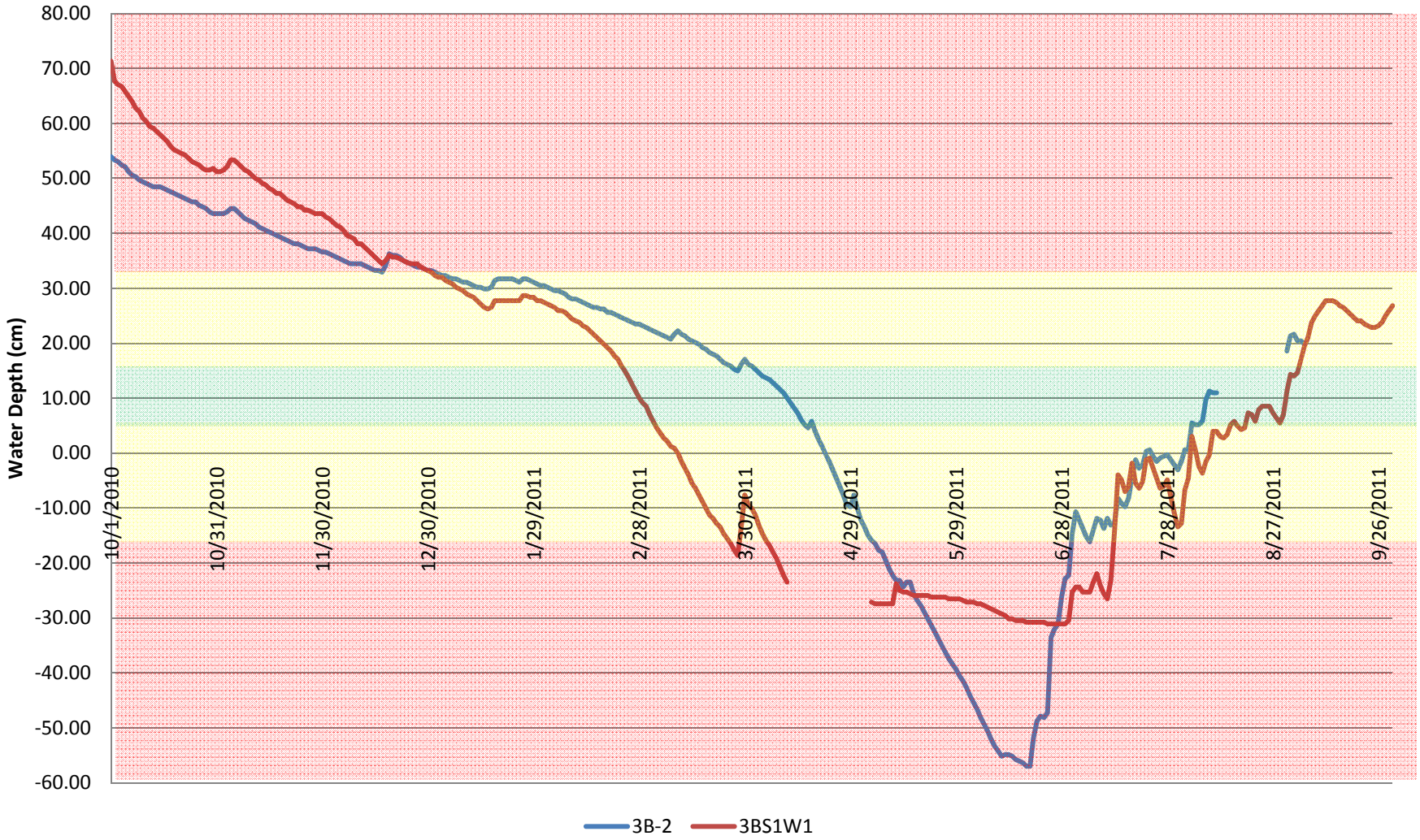

Figure 23. White ibis foraging depths within WCA-3B as measured at Gauge 3B-2 and Gauge 3BS1W1.

D. Tree Islands

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Sites 63, 64, 65])

Performance Measure

I. WCA-3A: For tree islands, strive to keep high water peaks < 10.8 feet, NGVD, not to exceed 10.8 ft for more than 60 days per year, and reach water levels < 10.3 feet, NGVD by December 31.

Table 27. WCA-3A peak high water levels, number of days WCA-3AVG was greater than 10.8 feet, NGVD and the WCA-3AVG stage (feet. NGVD) on December 31, 2010.

Year	WCA-3AVG High Water Peak Stage (feet, NGVD)	Number of Days WCA-3AVG > 10.8 feet, NGVD	WCA-3A Stage (feet, NGVD) on December 31
2010	10.68	0	9.57

As indicated in Table 27, water levels as measured at WCA-3AVG did not exceed 10.8 feet, NGVD during WY11; therefore, this PM was achieved.

VII. References

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ERTP Annual Assessment Appendix A: November 17, 2010 ERTP Biological Opinion Incidental Take Statement, Terms and Conditions and Reinitiation Notice

ERTP Annual Assessment Appendix B:
Species Monitoring Reports

ERTP Annual Assessment Appendix C:
WCA-3 Periodic Scientists Calls Documentation Reports

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

NOV 15 2012

Mr. Bob Progulske, Assistant Field Supervisor
South Florida Ecological Services Field Office
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960-3559

Dear Mr. Progulske,

In accordance with the November 17, 2010 U.S. Fish and Wildlife Service Biological Opinion on the Everglades Restoration Transition Plan (ERTP), the U.S. Army Corps of Engineers has prepared an annual assessment for Water Year 2012 covering the time period between October 1, 2011 and September 30, 2012. The assessment documents water management operations and includes an analysis of Incidental Take and ERTP Performance Measures. If you have any questions or need additional information, please contact Dr. Gina Ralph at 904-232-2336.

Sincerely,

Eric P. Summa
Chief, Planning Division
Environmental Branch

Enclosure

ANNUAL ASSESSMENT REPORT: WATER YEAR 2012 (OCTOBER 1, 2011-SEPTEMBER 30, 2012)

Everglades Restoration Transition Plan

Prepared by
Department of the Army
Jacksonville District Corps of Engineers

17 NOVEMBER 2012

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. Introduction

In accordance with the Terms and Conditions contained within the November 17, 2010 U.S. Fish and Wildlife Service (FWS) Biological Opinion (BO) on the Everglades Restoration Transition Plan (ERTP), the U.S. Army Corps of Engineers (USACE) is required to provide an annual assessment of ERTP operations. This annual assessment includes a summary of Periodic Scientists Calls, analysis of incidental take, analysis of ERTP performance measures and ecological targets and species monitoring. The Incidental Take Statements (ITS), Terms and Conditions and Reinitiation Notice as defined in the 2010 ERTP BO are included as Appendix A. Periodic Scientists Calls documentation reports are included as Appendix B. Species monitoring reports will be provided to FWS upon USACE receipt from Principal Investigators in accordance with monitoring contract schedule. All data used within this analysis was obtained from either the DBHYDRO database (http://my.sfwmd.gov/dbhydroplsql/show_dbkey_info.main_menu) maintained by the South Florida Water Management District or the EDEN Network (http://sofia.usgs.gov/eden/stationlist.php), maintained by the United States Geological Survey. Please note that all data is considered provisional and subject to change, unless otherwise noted. For additional information concerning Section II and Appendix B of this report, please contact Olice Williams at Olice.E.Williams@usace.army.mil; for additional information concerning the remainder of this document, please contact Dr. Gina Ralph at Gina.P.Ralph@usace.army.mil.

The ERTP Record of Decision was signed October 19, 2012, thereby implementing ERTP operations. All water management operations during Water Year 2012 were in accordance with the 2006 Interim Operational Plan for Protection of the Cape Sable Seaside Sparrow (IOP).

II. Periodic Scientists Calls

A. Summary of Input Received by Agency

As part of the Water Conservation Area 3 (WCA-3) Periodic Scientists Call (PSC) process, members of Federal, State and Local Agencies, Tribes and the general public are invited to participate. Table 1 provides a summary of input from Federal, State and Local Agencies as well as the Miccosukee Tribe of Indians of Florida provided for the PSCs within Water Year 2012 (WY12, October 1, 2011 through September 30, 2012).

B. Summary of Actions Taken by USACE

Table 1 provides a summary of water management operations for WY12. Operations include making WCA-3A rainfall plan target flow releases at the S-12 and S-333 structures (i.e. 45% at S-12 structures and 55% at S-333). Operations also include discharges through S-333 as needed for water supply purposes for Miami-Dade County.

C. USACE Decision-Making Rationale (Considerations)

Factors taken into consideration when performing water management operations includes, but is not limited to, potential impacts to public health and safety, as well as water supply needs, local basin runoff, current weather conditions, forecasted weather conditions, ecological conditions, flood protection, salinity control, groundwater control, estuary conditions, agricultural irrigation, and recreation. In addition, since the Record of Decision for ERTP was not executed until October 19, 2012, WY12 water management operations were defined by the 2006 Interim Operational Plan (IOP) for Protection of the Cape Sable Seaside Sparrow (CSSS).

D. Hydrologic Analysis of Actions Taken

WCA-3A water management actions taken from January through April of WY12 were to minimize releases from WCA-3A while remaining consistent with IOP 2006. WCA-3A water management actions taken for from May through the remainder of WY12 were to maximize releases from WCA-3A while remaining consistent with IOP 2006.

E. Conclusions

All operational decisions remained consistent with IOP 2006 making releases based on the WCA-3A Rainfall-Based Management Plan target flows while taking into consideration the multiple sources of input including the PSC forum.

Table 1. Water Conservation Area 3 Periodic Scientists Call: Summary of recommendations, decisions and hydrologic effects for WY12 (October 2012 through September 30, 2012).

PSC Date	Summary of Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Hydrologic Results
19-Jan-2012	Management efforts should focus on retaining water within Water Conservation Area 3A (WCA 3A) to the maximum extent possible when below Zone A. To provide nesting wading birds with suitable foraging areas throughout the nesting season, maximize wading prey production, support nesting snail kites, support apple snail survival and reproductive efforts and minimize the risk of muck fires the scientists recommend slowing the recession rate to reach the high end of a 3-Station Average (Sites 63, 64, 65) range between 9.0-9.3 ft NGVD on or around May 15.	Continued operations include minimum discharges from WCA-3A to slow recession rates. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. There will be no discharges from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 215 cfs (daily average) Outflow: S-12s= 236 cfs (daily average) S-333= 250 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To minimize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Water supply releases may be made at S-333 and S-334 for water supply.
2-Feb-2012	Management efforts should focus on retaining water within WCA 3A to the maximum extent possible when below Zone A. To provide nesting wading birds with suitable foraging areas throughout the nesting season, maximize wading prey production, support nesting snail kites, support apple snail survival and reproductive efforts and minimize the risk of muck fires the scientists recommend slowing the recession rate to reach the high end of a 3-Station Average (Sites 63, 64, 65) range between 9.0-9.3 ft NGVD on or around May 15.	Continued operations include minimum discharges from WCA-3A to slow recession rates. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. There will be no discharges from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 100 cfs (daily average) Outflow: S-12s= 152 cfs (daily average) S-333= 186 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To minimize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Water supply releases may be made at S-333 and S-334 for water supply.
23-Feb-2012	Management efforts should focus on retaining water within WCA 3A to the maximum extent possible when below Zone A. To provide nesting wading birds with suitable foraging areas throughout the nesting season, maximize wading prey production, support nesting snail kites, support apple snail survival and reproductive efforts and minimize the risk of muck fires the scientists recommend slowing the recession rate to reach the high end of a 3-Station Average (Sites 63, 64, 65) range between 9.0-9.3 ft NGVD on or around May 15.	Continued operations include minimum discharges from WCA-3A to slow recession rates. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. There will be no discharges from S-343A, S-343B and S-344 per IOP.	I Inflow: S-11s = 100 cfs (daily average) Outflow: S-12s= 123 cfs (daily average) S-333= 144 cfs (daily average) S-334 = 0 cfs S-151 = 0 cfs S-343A = 0 cfs S-343B = 0 cfs S-344 = 0 cfs	To minimize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Water supply releases may be made at S-333 and S-334 for water supply.
15-Mar-2012	Management efforts should focus on retaining water within WCA 3A to the maximum extent possible when below Zone A. To provide nesting wading birds with suitable foraging areas throughout the nesting season, maximize wading prey production, support nesting snail kites, support apple snail survival and reproductive efforts and minimize the risk of muck fires the scientists recommend slowing the recession rate to reach the high end of a 3-Station Average (Sites 63, 64, 65) range between 9.0-9.3 ft NGVD on or around May 15.	Continued operations include minimum discharges from WCA-3A to slow recession rates. Operations include continued discharges through S-12D to meet the WCA-3A Rainfall-Based Management Plan target flow. There will be no discharges from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 90 cfs (daily average) Outflow: S-12Ds = 80 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To minimize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Water supply releases may be made at S-333 and S-334 for water supply.

PSC Date	Summary of Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Hydrologic Results
5-Apr-2012	Management efforts should focus on retaining water within WCA 3A to the maximum extent possible when below Zone A. To provide nesting wading birds with suitable foraging areas throughout the nesting season, maximize wading prey production, support nesting snail kites, support apple snail survival and reproductive efforts and minimize the risk of muck fires the scientists recommend slowing the recession rate to reach the high end of a 3-Station Average (Sites 63, 64, 65) range between 9.0-9.3 ft NGVD on or around May 15. Note: The recommended low 3-Station Average (Sites 63, 64, 65) range between 9.0-9.3 ft NGVD (near the high end) was reached on April 1, six weeks before the target date of May 15.	Continued operations include minimum discharges from WCA-3A to slow recession rates. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. There will be no discharges from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 0 cfs Outflow: S-12s= 22 cfs (daily average) S-333= 205 cfs (daily average) S-334= 198 cfs (daily average) S-151= 200 cfs (daily average) S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To minimize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Water supply releases may be made at S-333 and S-334 for water supply.
26-Apr-2012	Management efforts should focus on retaining water within WCA 3A to the maximum extent possible when below Zone A. To provide nesting wading birds with suitable foraging areas throughout the nesting season, maximize wading prey production, support nesting snail kites, support apple snail survival and reproductive efforts and minimize the risk of muck fires the scientists recommend slowing the recession rate to reach the high end of a 3-Station Average (Sites 63, 64, 65) range between 9.0-9.3 ft NGVD on or around May 15. Note: The recommended low 3-Station Average (Sites 63, 64, 65) range between 9.0-9.3 ft NGVD (near the high end) was reached on April 1, six weeks before the target date of May 15.	Continued operations include minimum discharges from WCA-3A to slow recession rates. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow (0 cfs). There will be no discharges from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 0 cfs Outflow: S-12s = 0 cfs S-333 = 0 cfs S-334= 0 cfs S-151= 0 cfs S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To minimize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow (0 cfs). Water supply releases may be made at S-333 and S-334 for water supply.
17-May-2012	Management efforts should focus on reducing the water levels in WCA 3A to the maximum extent possible. To avoid drowning apple snail egg clusters and to maximize apple snail reproduction the scientists recommend by maximizing outflows from WCA 3A to moderate the ascension in Zone E1 in order to reach the recommended 3 Station Average (Sites 63, 64, 65) close to 10.50' by October 1.	Continued operations include maximum practicable discharges from WCA-3A to reduce the water levels. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. There will be no discharges from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 772 cfs (daily average) Outflow: S-12s = 135 cfs (daily average) S-333= 410 cfs (daily average) S-334= 0 cfs S-151= 200 cfs (daily average) S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To maximize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow and maximum practicable discharge through S-151 Water supply releases may be made at S-333 and S-334 for water supply.

PSC Date	Summary of Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Hydrologic Results
31-May-2012	Management efforts should focus on reducing the water levels in WCA 3A to the maximum extent possible. To avoid drowning apple snail egg clusters and to maximize apple snail reproduction the scientists recommend by maximizing outflows from WCA 3A to moderate the ascension in Zone E1 in order to reach the recommended 3 Station Average (Sites 63, 64, 65) close to 10.50' by October 1.	Continued operations include maximum practicable discharges from WCA	Inflow: S-11s = 2222 cfs (daily average) Outflow: S-12s= 295 cfs (daily average) S-333= 889 cfs (daily average) S-334= 510 cfs (daily average) S-151= 345 cfs (daily average) S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To maximize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow and maximum practicable discharge through S-151 Water supply releases may be made at S-333 and S-334 for water supply.
14-Jun-2012	Management efforts should focus on reducing the water levels in WCA 3A to the maximum extent possible. To avoid drowning apple snail egg clusters and to maximize apple snail reproduction the scientists recommend by maximizing outflows from WCA 3A to moderate the ascension in Zone E1 in order to reach the recommended 3 Station Average (Sites 63, 64, 65) close to 10.50' by October 1.	Continued operations include maximum practicable discharges from WCA-3A to reduce the water levels. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. There will be no discharges from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 1744 cfs (daily average) Outflow: S-12s= 443 cfs (daily average) S-333= 880 cfs (daily average) S-334= 450 cfs (daily average) S-151= 470 cfs (daily average) S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To maximize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow and maximum practicable discharge through S-151 Water supply releases may be made at S-333 and S-334 for water supply.
12-Jul-2012	Management efforts should focus on reducing the water levels in WCA 3A to the maximum extent possible. To avoid drowning apple snail egg clusters and to maximize apple snail reproduction the scientists recommend by maximizing outflows from WCA 3A to moderate the ascension in Zone E1 in order to reach the recommended 3 Station Average (Sites 63, 64, 65) close to 10.50' by October 1.	Continued operations include maximum practicable discharges from WCA-3A to reduce the water levels. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. There will be no discharges from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 1064 cfs (daily average) Outflow: S-12s= 676 cfs (daily average) S-333= 215 cfs (daily average) S-334= 200 cfs (daily average) S-151= 550 cfs (daily average) S-343A = 0 cfs S-343B = 0 cfs S-344= 0 cfs	To maximize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow and maximum practicable discharge through S-151 Water supply releases may be made at S-333 and S-334 for water supply.
02-Aug-2012	Management efforts should focus on reducing the water levels in WCA 3A to the maximum extent possible. To avoid drowning apple snail egg clusters and to maximize apple snail reproduction the scientists recommend by maximizing outflows from WCA 3A to moderate the ascension in Zone E1 in order to reach the recommended 3 Station Average (Sites 63, 64, 65) close to 10.50' by October 1.	Continued operations include maximum practicable discharges from WCA-3A to reduce the water levels. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Discharges are being made from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 940 cfs (daily average) Outflow: S-12s= 1529 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 550 cfs (daily average) S-343A = Open Full S-343B = Open Full S-344= Open Full	To maximize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Maximum practicable discharges are being made through S-151 and S-343A, S-343B and S-344. Water supply releases may be made at S-333 and S-334 for water supply.

PSC Date	Summary of Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Hydrologic Results
30-Aug-2012	Management efforts should focus on reducing the water levels in WCA 3A to the maximum extent possible. To avoid drowning apple snail egg clusters and to maximize apple snail reproduction the scientists recommend by maximizing outflows from WCA 3A to moderate the ascension in Zone E1 in order to reach the recommended 3 Station Average (Sites 63, 64, 65) close to 10.50' by October 1.	Continued operations include maximum practicable discharges from WCA-3A to reduce the water levels. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Discharges are being made from S-343A, S-343B and S-344 per IOP	Inflow: S-11s = 1602 cfs (daily average) Outflow: S-12s= 1500 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 283 cfs (daily average) S-343A = Open Full S-343B = Open Full S-344= Open Full	To maximize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Maximum practicable discharges are being made through S-151 and S-343A, S-343B and S-344. Water supply releases may be made at S-333 and S-334 for water supply.
13-Sep-2012	Management efforts should focus on reducing the water levels in WCA 3A to the maximum extent possible. To avoid drowning apple snail egg clusters and to maximize apple snail reproduction the scientists recommend by maximizing outflows from WCA 3A to moderate the ascension in Zone E1 in order to reach the recommended 3 Station Average (Sites 63, 64, 65) close to 10.50' by October 1.	Continued operations include maximum practicable discharges from WCA-3A to reduce the water levels. Operations include continued discharges through S-12D, and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Discharges are being made from S-343A, S-343B and S-344 per IOP.	Inflow: S-11s = 4723 cfs (daily average) Outflow: S-12s= 1700 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 527 cfs (daily average) S-343A = Open Full S-343B = Open Full S-344= Open Full	To maximize releases from WCA-3A	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Maximum practicable discharges are being made through S-151 and S-343A, S-343B and S-344. Water supply releases may be made at S-333 and S-334 for water supply.

III. Incidental Take Statement Analysis: Everglade Snail Kite

A. Prolonged High Stages

1. ***Reinitiation Trigger****: If water levels rise above 10.5 feet, NGVD at gauge 3AS3W1 for 60 consecutive days in 2 consecutive years as a result of ERTP operations (or the period in which IOP remains in place), incidental take will be exceeded.*

Note: If water levels rise above 10.5 feet, NGVD at the 3AS3W1 gauge for 60 consecutive days in any single year, USACE will conduct a retrospective review to determine potential cause(s) of the high water and share this information with FWS.

Table 2. Total annual precipitation and the number of days Gauge 3AS3W1 was greater than 10.5 feet, NGVD for Water Year 2011 and Water Year 2012 (October 1– September 30).

Water Year	Total Precipitation (inches; EDEN-NEXRAD)	Gauge 3AS3W1 High Water Peak Stage (feet, NGVD)	Number of Days Gauge 3AS3W1 > 10.5 feet, NGVD
2011	42.33	10.19	0
2012	46.45*	10.83	41

* Note: Precipitation data for August and September 2012 are not yet available; therefore, total precipitation is limited to October 1, 2011 through July, 2012. Total precipitation will be updated once the data become available. Note that precipitation data for WY11 was also updated from the WY11 ERTP Annual Assessment to include data from September 2011.

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

4. **Conclusion:** *As indicated in Table 2 and Figure 1, during WY12 water levels at Gauge 3AS3W1 did not rise above 10.5 feet, NGVD for a period of greater than 60 days. As such there is no requirement for USACE to conduct a retrospective review of water management actions related to this ITS trigger.*

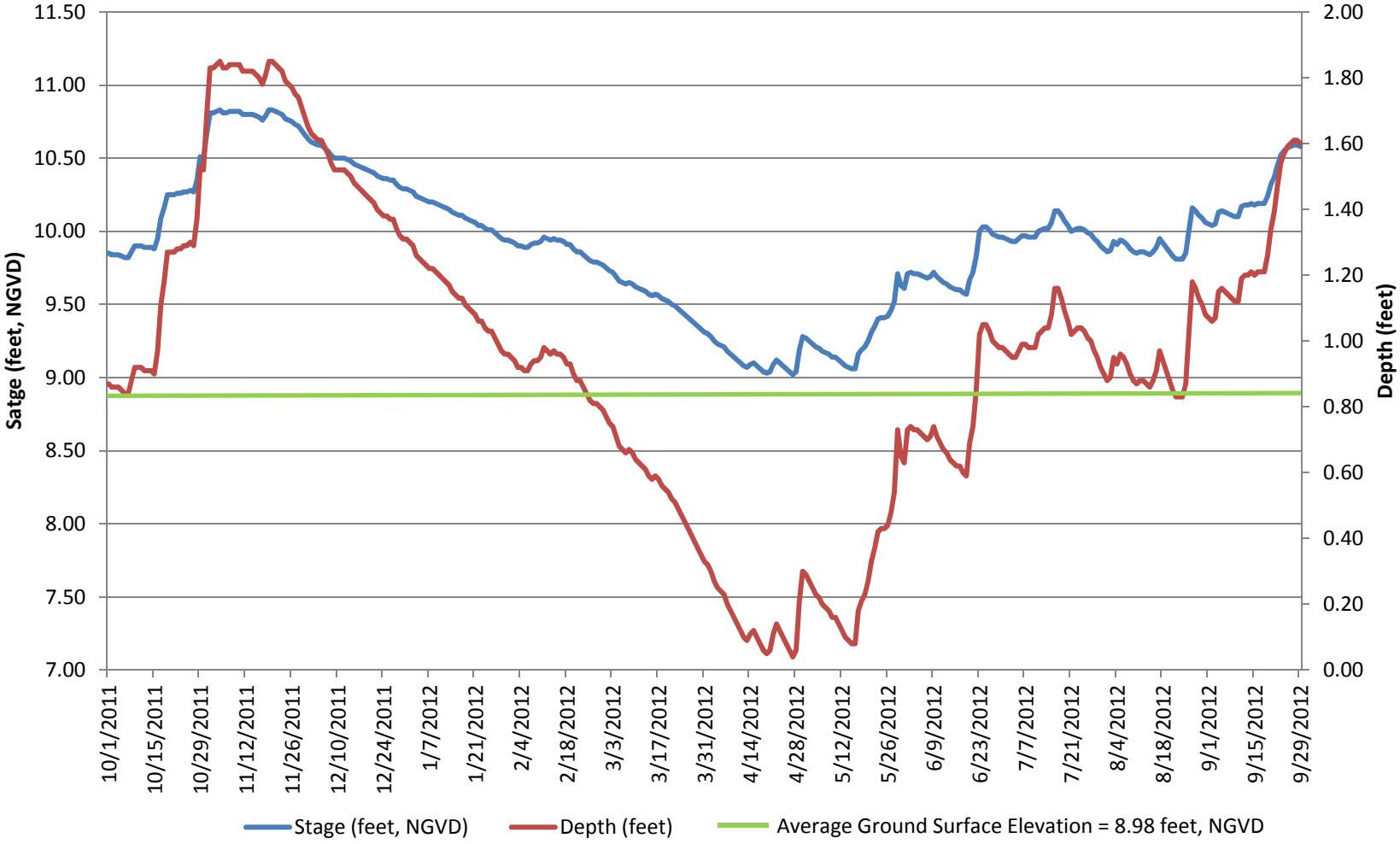

Figure 1. Gauge 3AS3W1 Stage (feet, NGVD) from October 1, 2011 through September 30, 2012.

B. High Water in Dry Season

1. **Reinitiation Trigger:** *Incidental Take will be exceeded when maximum water levels exceed 9.2 feet, NGVD at Gauge 3AS3W1 on or after April 15 in two consecutive years as a result of ERTP operations, or during the period when IOP remains in place.*

Note: If water levels exceed this threshold in any single year, USACE will conduct a retrospective review to determine the potential causes(s) of high water and will coordinate with FWS to apply adaptive management in an attempt to avoid high water conditions during future dry seasons.

Table 3. Number of days Gauge 3AS3W1 was greater than 9.2 feet, NGVD between April 15 and May 31, 2012.

Water Year	Total Precipitation (inches; EDEN-NEXRAD; January 1-May 31)	Gauge 3AS3W1 High Water Peak Stage (feet, NGVD)	Number of Days Gauge 3AS3W1 > 9.2 feet, NGVD (April 15-May 31)
2011	8.88	8.49	0
2012	19.36	9.71	18

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

4. **Conclusion**: *As indicated in Table 3 and Figure 2, during WY12 water levels at Gauge 3AS3W1 rose above 9.2 feet, NGVD during the period between April 15 and May 31 for a period of 18 days. As such there is a requirement for USACE to conduct a retrospective review of water management actions related to this ITS trigger.*

As required by 2006 IOP, S-12A, S-12B, S-12C, S-343A, S-343B and S-344 were closed through July 31, 2012 for protection of CSSS; therefore, these structures were unavailable for water releases from WCA-3A. USACE has concluded that operations of the remaining outlet structures were maximized and in accordance with 2006 IOP, therefore, USACE has concluded that high water conditions between April 15 and May 31, 2012 were the result of rainfall and not USACE water management operations. Under ERTP, water managers would have the additional benefit of the use of S-12C and therefore would have a greater potential to meet WCA-3A depth requirements.

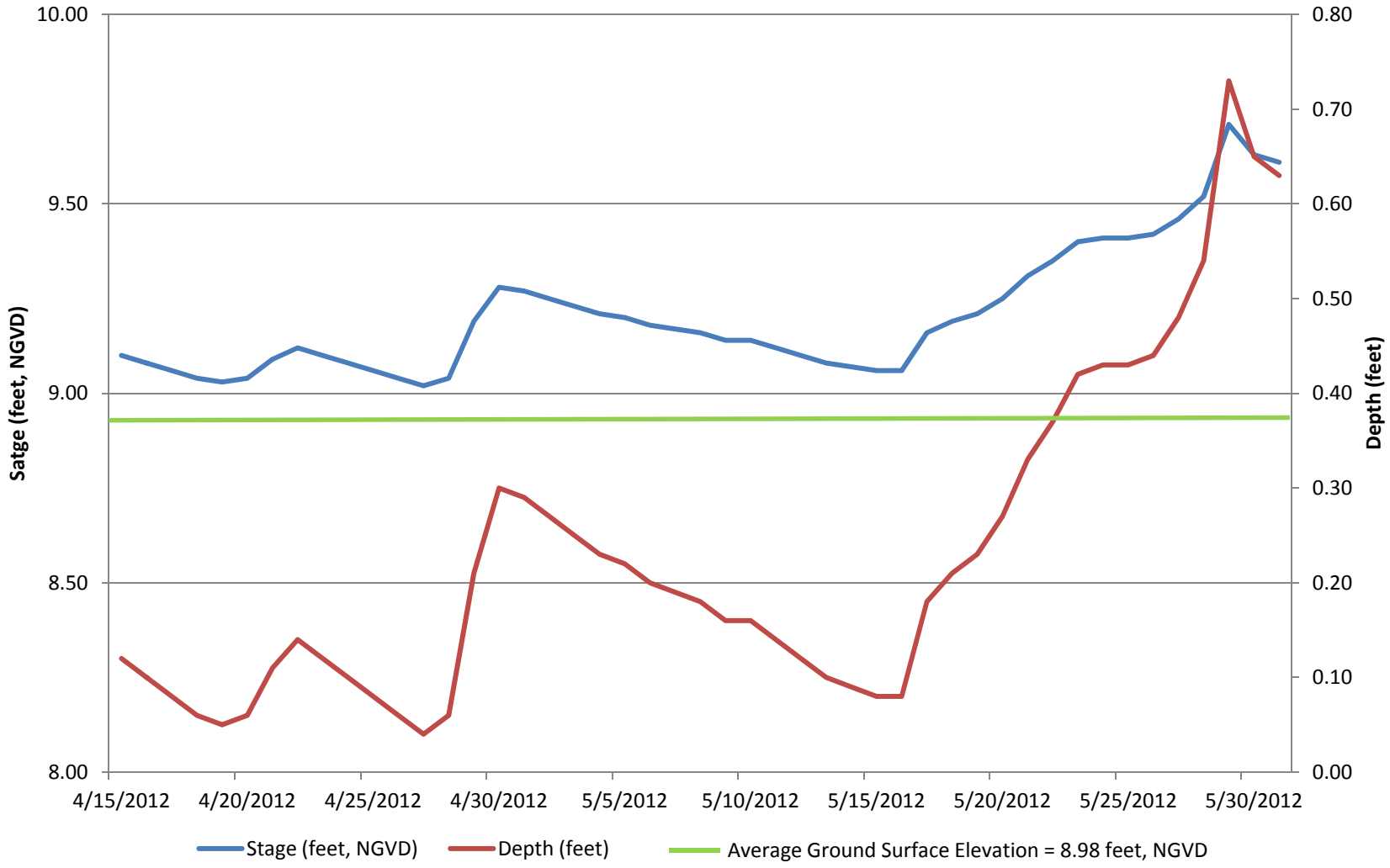

Figure 2. Gauge 3AS3W1 Stage (feet, NGVD) from April 15 through May 31, 2012.

C. Rapid Recession Rates and Amplitude

1. **Reinitiation Trigger:** *Incidental Take will be exceeded if stages in WCA-3A, as measured by the gauge(s) closest to active kite nesting (assessed by FWS as described within the ERTP BO), recede by (1) more than 1.7 feet from January 1 through May 31 or the onset of the wet season, whichever is sooner, or (2) more than 0.34 feet within any 30-day period, in 2 consecutive years as a result of ERTP operations, or the period in which IOP remains in place.*

Note: If either of these amplitudes is exceeded in any single year, USACE will conduct a retrospective review to determine the potential cause(s) of the rapid recession and how future operations can avoid exceeding these thresholds.

Table 4. Dry Season Amplitude: WCA-3A January 1 to May 31 stage difference as measured at the specified gauges*.

Water Year	WCA-3A Stage Difference (feet; January 1 to May 31)			
	3AS3W1	W2	3A-28	3A-4
2011	1.58	1.35	1.81	1.98
2012	0.65	0.99	0.74	0.59

* Note: FWS has determined that all gauges listed are relevant to snail kite nesting during WY11. FWS has determined that Gauge W2 is relevant to snail kite nesting during WY12.

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *Yes*

Table 5. Dry Season Amplitude: WCA-3A January 1 to May 31, 2012, 30-day rolling stage difference as measured at the specified gauges.

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
1/1/2012	10.28		8.71		10.21		10.56	
1/2/2012	10.27		8.70		10.20		10.54	
1/3/2012	10.24		8.69		10.20		10.48	
1/4/2012	10.23		8.68		10.19		10.47	
1/5/2012	10.22		8.67		10.17		10.47	
1/6/2012	10.21		8.66		10.16		10.47	
1/7/2012	10.20		8.65		10.14		10.46	
1/8/2012	10.20		8.64		10.13		10.46	
1/9/2012	10.19		8.63		10.13		10.45	
1/10/2012	10.18		8.62		10.11		10.44	
1/11/2012	10.17		8.61		10.09		10.44	
1/12/2012	10.16		8.59		10.08		ND	
1/13/2012	10.15		8.58		10.08		ND	
1/14/2012	10.13		8.58		10.08		ND	
1/15/2012	10.12		8.58		10.07		ND	
1/16/2012	10.11		8.57		10.05		ND	
1/17/2012	10.11		8.56		10.04		ND	
1/18/2012	10.09		8.53		10.02		ND	
1/19/2012	10.08		8.52		10.00		ND	
1/20/2012	10.07		8.51		10.00		10.28	
1/21/2012	10.06		8.50		9.98		10.27	
1/22/2012	10.04		8.48		9.96		10.25	
1/23/2012	10.04		8.47		9.95		10.25	
1/24/2012	10.02		8.46		9.94		10.24	
1/25/2012	10.01		8.45		9.93		10.23	
1/26/2012	10.01		8.44		9.92		10.22	
1/27/2012	9.99		8.42		9.89		10.21	
1/28/2012	9.97		8.40		9.88		10.18	
1/29/2012	9.95		8.40		9.88		10.15	
1/30/2012	9.94	0.34	8.40	0.31	9.89	0.32	10.14	0.42
1/31/2012	9.94	0.33	8.40	0.30	9.87	0.33	10.13	0.41
2/1/2012	9.93	0.31	8.38	0.31	9.86	0.34	10.13	0.35
2/2/2012	9.92	0.31	8.36	0.32	9.84	0.35	10.11	0.36
2/3/2012	9.90	0.32	8.35	0.32	9.83	0.34	10.11	0.36
2/4/2012	9.90	0.31	8.34	0.32	9.82	0.34	10.10	0.37
2/5/2012	9.89	0.31	8.33	0.32	9.80	0.34	10.09	0.37
2/6/2012	9.89	0.31	8.33	0.31	9.81	0.32	10.10	0.36
2/7/2012	9.91	0.28	8.33	0.30	9.83	0.30	10.16	0.29
2/8/2012	9.92	0.26	8.36	0.26	9.86	0.25	10.19	0.25
2/9/2012	9.92	0.25	8.37	0.24	9.87	0.22	10.18	0.26
2/10/2012	9.93	0.23	8.39	0.20	9.88	0.20	10.19	ND
2/11/2012	9.96	0.19	8.41	0.17	9.90	0.18	10.20	ND
2/12/2012	9.95	0.18	8.41	0.17	9.92	0.16	10.15	ND
2/13/2012	9.94	0.18	8.42	0.16	9.92	0.15	10.16	ND
2/14/2012	9.95	0.16	8.41	0.16	9.90	0.15	10.18	ND
2/15/2012	9.94	0.17	8.39	0.17	9.88	0.16	10.17	ND
2/16/2012	9.94	0.15	8.38	0.15	9.87	0.15	10.17	ND
2/17/2012	9.93	0.15	8.37	0.15	9.86	0.14	10.15	ND
2/18/2012	9.91	0.16	8.36	0.15	9.85	0.15	10.14	0.14
2/19/2012	9.91	0.15	8.34	0.16	9.83	0.15	10.14	0.13
2/20/2012	9.88	0.16	8.32	0.16	9.82	0.14	10.10	0.15
2/21/2012	9.86	0.18	8.32	0.15	9.82	0.13	10.09	0.16
2/22/2012	9.86	0.16	8.30	0.16	9.81	0.13	10.08	0.16
2/23/2012	9.84	0.17	8.28	0.17	9.77	0.16	10.07	0.16
2/24/2012	9.82	0.19	8.26	0.18	9.75	0.17	10.06	0.16
2/25/2012	9.80	0.19	8.24	0.18	9.73	0.16	10.04	0.17
2/26/2012	9.79	0.18	8.24	0.16	9.73	0.15	10.02	0.16
2/27/2012	9.79	0.16	8.24	0.16	9.72	0.16	10.02	0.13
2/28/2012	9.78	0.16	8.22	0.18	9.71	0.18	9.99	0.15
2/29/2012	9.77	0.17	8.21	0.19	9.69	0.18	9.99	0.14
3/1/2012	9.75	0.18	8.19	0.19	9.67	0.19	9.97	0.16
3/2/2012	9.73	0.19	8.17	0.19	9.65	0.19	9.96	0.15
3/3/2012	9.72	0.18	8.15	0.20	9.63	0.20	9.95	0.16
3/4/2012	9.69	0.21	8.12	0.22	9.60	0.22	9.93	0.17
3/5/2012	9.66	0.23	8.10	0.23	9.59	0.21	9.86	0.23
3/6/2012	9.65	0.24	8.10	0.23	9.59	0.22	9.85	0.25

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
3/7/2012	9.64	0.27	8.11	0.22	9.57	0.26	9.87	0.29
3/8/2012	9.65	0.27	8.10	0.26	9.57	0.29	9.86	0.33
3/9/2012	9.64	0.28	8.09	0.28	9.56	0.31	9.86	0.32
3/10/2012	9.62	0.31	8.07	0.32	9.55	0.33	9.84	0.35
3/11/2012	9.61	0.35	8.06	0.35	9.54	0.36	9.84	0.36
3/12/2012	9.60	0.35	8.05	0.36	9.52	0.40	9.83	0.32
3/13/2012	9.59	0.35	8.04	0.38	9.51	0.41	9.81	0.35
3/14/2012	9.57	0.38	8.03	0.38	9.50	0.40	9.78	0.40
3/15/2012	9.56	0.38	8.02	0.37	9.50	0.38	9.78	0.39
3/16/2012	9.57	0.37	8.03	0.35	9.49	0.38	9.80	0.37
3/17/2012	9.56	0.37	8.02	0.35	9.49	0.37	9.78	0.37
3/18/2012	9.54	0.37	8.00	0.36	9.48	0.37	9.76	0.38
3/19/2012	9.53	0.38	7.99	0.35	9.46	0.37	9.75	0.39
3/20/2012	9.52	0.36	7.97	0.35	9.45	0.37	9.74	0.36
3/21/2012	9.50	0.36	7.96	0.36	9.43	0.39	9.73	0.36
3/22/2012	9.49	0.37	7.94	0.36	9.41	0.40	9.72	0.36
3/23/2012	9.47	0.37	7.91	0.37	9.38	0.39	9.69	0.38
3/24/2012	9.45	0.37	7.89	0.37	9.36	0.39	9.66	0.40
3/25/2012	9.43	0.37	7.86	0.38	9.34	0.39	9.63	0.41
3/26/2012	9.41	0.38	7.83	0.41	9.31	0.42	9.59	0.43
3/27/2012	9.39	0.40	7.81	0.43	9.29	0.43	9.56	0.46
3/28/2012	9.37	0.41	7.80	0.42	9.27	0.44	9.56	0.43
3/29/2012	9.35	0.42	7.78	0.43	9.25	0.44	9.54	0.45
3/30/2012	9.33	0.42	7.75	0.44	9.22	0.45	9.52	0.45
3/31/2012	9.31	0.42	7.73	0.44	9.20	0.45	9.50	0.46
4/1/2012	9.30	0.42	7.71	0.44	9.19	0.44	9.47	0.48
4/2/2012	9.28	0.41	7.69	0.43	9.17	0.43	9.44	0.49
4/3/2012	9.25	0.41	7.66	0.44	9.15	0.44	9.41	0.45
4/4/2012	9.23	0.42	7.64	0.46	9.13	0.46	9.41	0.44
4/5/2012	9.22	0.42	7.63	0.48	9.13	0.44	9.41	0.46
4/6/2012	9.21	0.44	7.60	0.50	9.10	0.47	9.39	0.47
4/7/2012	9.18	0.46	7.57	0.52	9.08	0.48	9.35	0.51
4/8/2012	9.16	0.46	7.56	0.51	9.06	0.49	9.33	0.51
4/9/2012	9.14	0.47	7.54	0.52	9.04	0.50	9.31	0.53
4/10/2012	9.12	0.48	7.52	0.53	9.02	0.50	9.29	0.54
4/11/2012	9.10	0.49	7.50	0.54	9.00	0.51	9.27	0.54
4/12/2012	9.08	0.49	7.47	0.56	8.97	0.53	9.25	0.53
4/13/2012	9.07	0.49	7.45	0.57	8.95	0.55	9.22	0.56
4/14/2012	9.09	0.48	7.44	0.59	8.95	0.54	9.24	0.56
4/15/2012	9.10	0.46	7.43	0.59	8.95	0.54	9.27	0.51
4/16/2012	9.08	0.46	7.42	0.58	8.93	0.55	9.27	0.49
4/17/2012	9.06	0.47	7.40	0.59	8.91	0.55	9.24	0.51
4/18/2012	9.04	0.48	7.38	0.59	8.89	0.56	9.22	0.52
4/19/2012	9.03	0.47	7.38	0.58	8.88	0.55	9.21	0.52
4/20/2012	9.04	0.45	7.43	0.51	8.89	0.52	9.19	0.53
4/21/2012	9.09	0.38	7.50	0.41	8.97	0.41	9.25	0.44
4/22/2012	9.12	0.33	7.51	0.38	8.99	0.37	9.31	0.35
4/23/2012	9.10	0.33	7.48	0.38	8.98	0.36	9.30	0.33
4/24/2012	9.08	0.33	7.45	0.38	8.95	0.36	9.26	0.33
4/25/2012	9.06	0.33	7.43	0.38	8.92	0.37	9.23	0.33
4/26/2012	9.04	0.33	7.42	0.38	8.90	0.37	9.21	0.35
4/27/2012	9.02	0.33	7.40	0.38	8.89	0.36	9.19	0.35
4/28/2012	9.04	0.29	7.40	0.35	8.90	0.32	9.18	0.34
4/29/2012	9.19	0.12	7.50	0.23	9.02	0.18	9.32	0.18
4/30/2012	9.28	0.02	7.60	0.11	9.12	0.07	9.44	0.03
5/1/2012	9.27	0.01	7.64	0.05	9.13	0.04	9.47	-0.03
5/2/2012	9.25	0.00	7.64	0.02	9.12	0.03	9.47	-0.06
5/3/2012	9.23	0.00	7.63	0.01	9.11	0.02	9.45	-0.04
5/4/2012	9.21	0.01	7.62	0.01	9.10	0.03	9.43	-0.02
5/5/2012	9.20	0.01	7.60	0.00	9.09	0.01	9.41	-0.02
5/6/2012	9.18	0.00	7.59	-0.02	9.08	0.00	9.39	-0.04
5/7/2012	9.17	-0.01	7.58	-0.02	9.07	-0.01	9.36	-0.03
5/8/2012	9.16	-0.02	7.57	-0.03	9.08	-0.04	9.35	-0.04
5/9/2012	9.14	-0.02	7.56	-0.04	9.07	-0.05	9.36	-0.07
5/10/2012	9.14	-0.04	7.55	-0.05	9.06	-0.06	9.38	-0.11
5/11/2012	9.12	-0.04	7.53	-0.06	9.04	-0.07	9.39	-0.14
5/12/2012	9.10	-0.03	7.52	-0.07	9.03	-0.08	9.40	-0.18

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
5/13/2012	9.08	0.01	7.52	-0.08	9.02	-0.07	9.40	-0.16
5/14/2012	9.07	0.03	7.53	-0.10	9.01	-0.06	9.40	-0.13
5/15/2012	9.06	0.02	7.54	-0.12	9.02	-0.09	9.41	-0.14
5/16/2012	9.06	0.00	7.53	-0.13	9.02	-0.11	9.42	-0.18
5/17/2012	9.16	-0.12	7.61	-0.23	9.10	-0.21	9.60	-0.38
5/18/2012	9.19	-0.16	7.61	-0.23	9.11	-0.23	9.61	-0.40
5/19/2012	9.21	-0.17	7.64	-0.21	9.11	-0.22	9.65	-0.46
5/20/2012	9.25	-0.16	7.69	-0.19	9.18	-0.21	9.71	-0.46
5/21/2012	9.31	-0.19	7.68	-0.17	9.28	-0.29	9.74	-0.43
5/22/2012	9.35	-0.25	7.70	-0.22	9.34	-0.36	9.86	-0.56
5/23/2012	9.40	-0.32	7.72	-0.27	9.38	-0.43	9.97	-0.71
5/24/2012	9.41	-0.35	7.75	-0.32	9.38	-0.46	9.94	-0.71
5/25/2012	9.41	-0.37	7.77	-0.35	9.39	-0.49	9.90	-0.69
5/26/2012	9.42	-0.40	7.78	-0.38	9.38	-0.49	9.88	-0.69
5/27/2012	9.46	-0.42	7.79	-0.39	9.38	-0.48	9.86	-0.68
5/28/2012	9.52	-0.33	7.79	-0.29	9.39	-0.37	9.91	-0.59
5/29/2012	9.71	-0.43	7.86	-0.26	9.46	-0.34	10.02	-0.58
5/30/2012	9.63	-0.36	7.87	-0.23	9.47	-0.34	9.97	-0.50
5/31/2012	9.61	-0.36	7.89	-0.25	9.48	-0.36	9.96	-0.49

* Note: Numbers highlighted in yellow indicate recession rates that are greater than preferred (i.e. $\geq$ 0.34 feet) within a 30-day period. Negative numbers represent rising water.

4. Conclusion: *As shown in Table 4 and Table 5 of the WY11 ERT Annual Assessment, both the dry season amplitude and the monthly amplitude were exceeded during the period between January 1 and May 31, 2011. As required under the ERTP BO, USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession and how future operations can avoid exceeding these thresholds. The review considered water management operations including releases through the WCA-3A outlet structures, evapotranspiration rates and WCA-3A inflows (e.g. rainfall). A spreadsheet analysis was employed to calculate the effect of S-333 water supply releases on WCA-3A stage. Based upon the results of this analysis, the effect of S-333 releases on WCA-3A stage during WY11 equates to an approximate total of 2.7 inches (0.23 feet). Figure 3 of the WY11 ERTP Annual Assessment illustrates precipitation amounts along with S-333 and S-12 releases throughout the period between January 1 and May 31, 2011. As a result of this retrospective review, USACE determined that the rapid recession rates experienced throughout this period were not a direct result of water management actions, but rather due to the extremely high evapotranspiration rates associated with a strong La Niña and widespread drought conditions.*

As shown in Table 4 of this document, the dry season amplitude as Gauge W2 did not exceed the threshold, however, as shown in Table 4 of this document, the monthly amplitude was exceeded for the second year, therefore reinitiation is required for this trigger. The USACE retrospective review consisted of the same methodology employed for WY11. Since the majority of WCA-3A outlet structures (i.e. S-12A-D, S343A/B and S-344) were closed during this period, S-333 was opened to meet Lower East Coast water supply demands (as permitted by WCA-3A Regulation Schedule), and rapid recession rates were attributed to extremely high evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future. La Niña conditions similar to those experienced during 2011 were experienced during the 2012 dry season, therefore, as anticipated in the WY11 ERTP Annual Assessment the established thresholds were again exceeded.

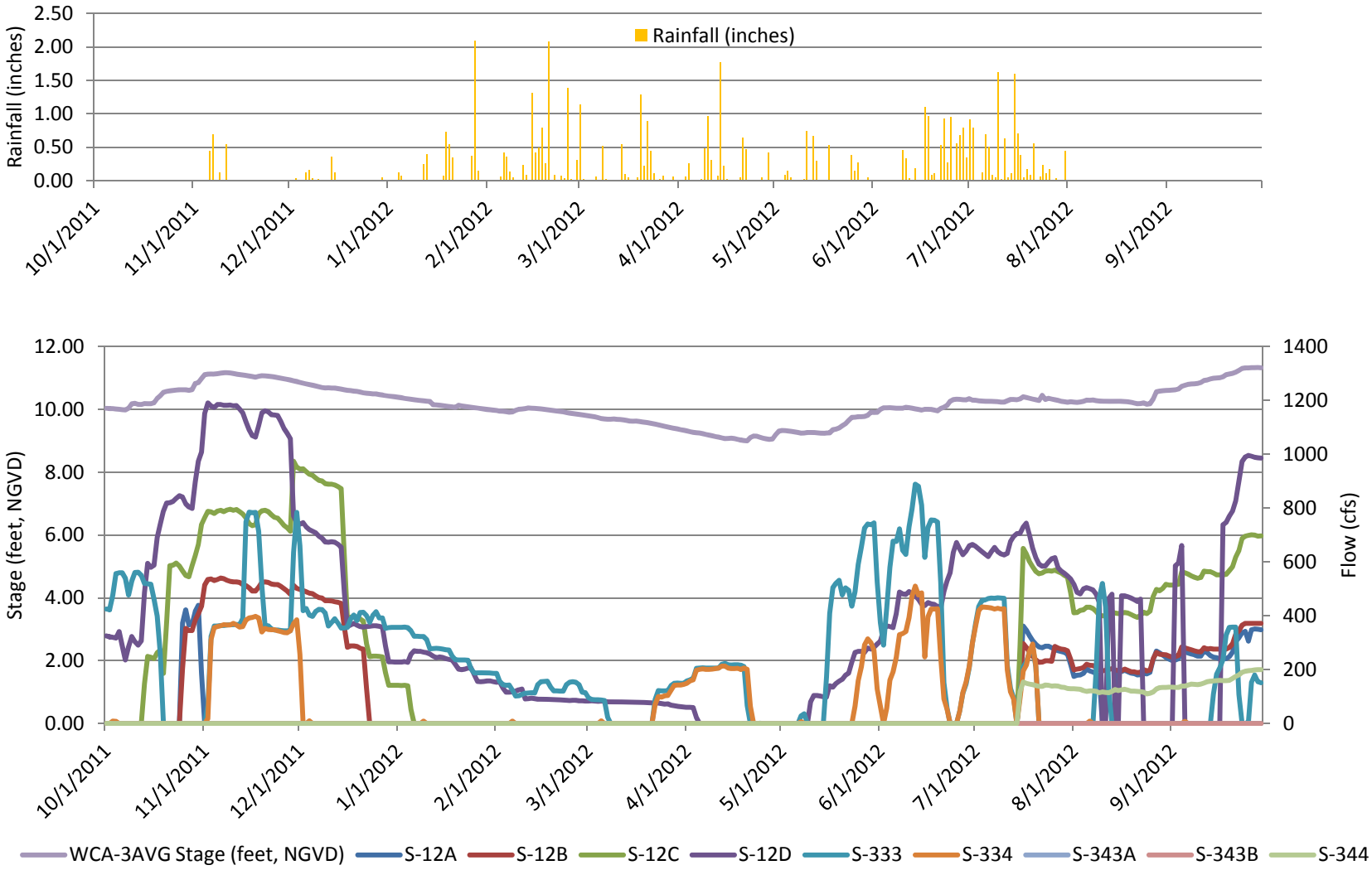

Figure 3. WCA-3AVG Stage (feet, NGVD), WCA-3AVG rainfall (inches) and WCA-3A outflow during WY12.

IV. Incidental Take Statement Analysis: Wood Stork

A. Breeding Season Foraging Depths (Revised March 2, 2012, ERTP BO Amendment)

1. **Reinitiation Trigger:** *Incidental Take will be exceeded if operations from implementing ERTP, or the interim IOP period, results in a water depth greater than 16 inches (41 centimeters) from March 1 through May 31 throughout WCA-3A for two consecutive years as measured by the 3-gauge average (based upon a ground surface elevation of 8.34 feet NGVD) at gauges 3A-3, 3A-4 and 3A-28.*

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

Table 6. Number of days water depth exceeded 16 inches (41 centimeters) at the WCA-3AVG (3-gauge average) between March 1 and May 31, 2012.

Month	2012: Precipitation (inches; EDEN-NEXRAD)	2012: Number of Days Water Depth Exceeded 16 inches (41 centimeters)
March	5.79	11
April	3.40	0
May	10.08	9
Total	19.27	20

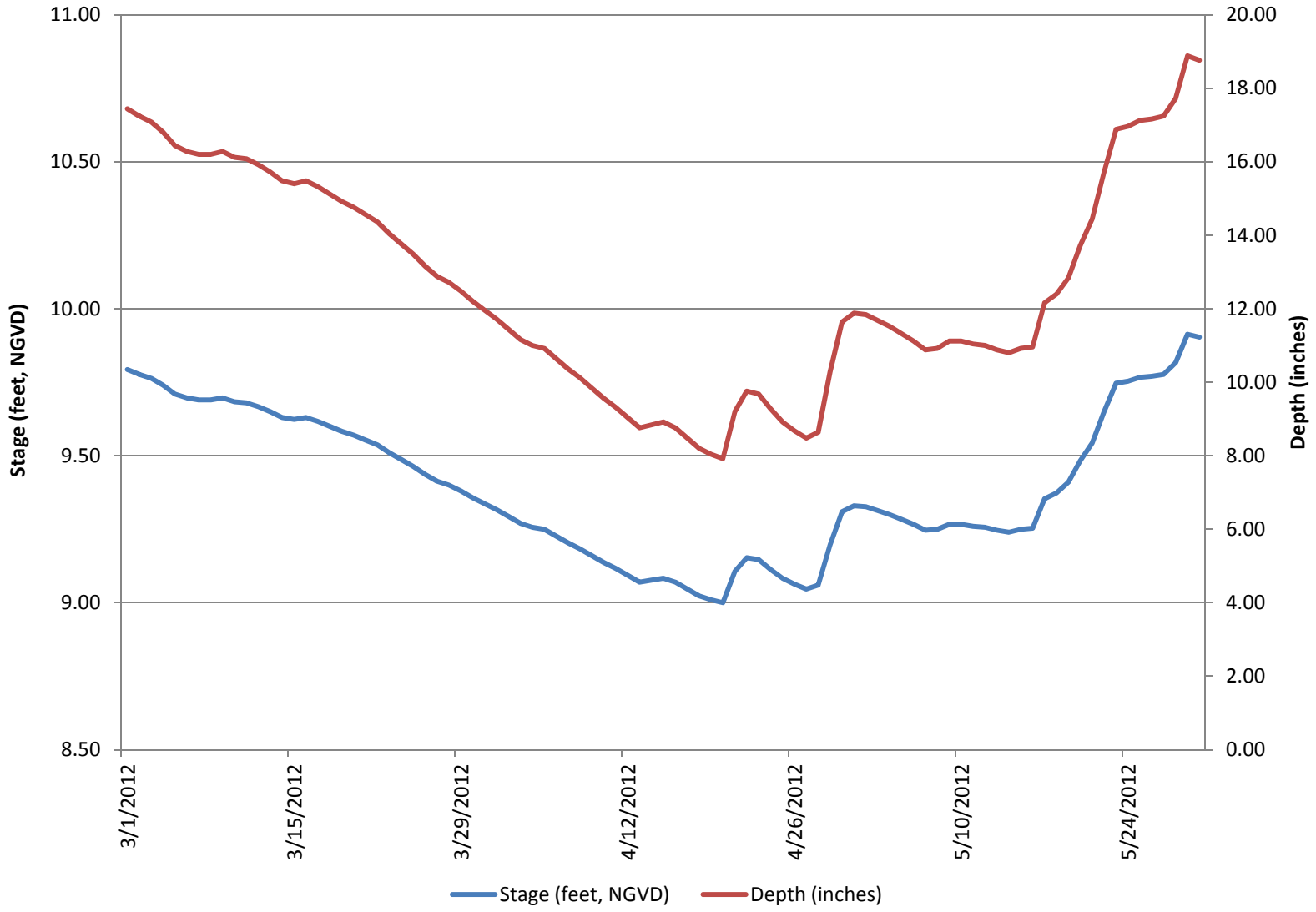

Figure 4. WCA-3AVG Stage (feet, NGVD) and water depth (inches) between March 1 and May 31, 2012.

4. ***Conclusion****: As shown in Table 6 and Figure 4, water depths at WCA-3AVG exceeded 16 inches during March and May 2012. Upon a more detailed analysis of water depths at the three gauges that comprise the WCA-3AVG (3A-3, 3A-4, 3A-28), water depths at Gauge 3A-3 in northern WCA-3A never rose above 16 inches during March and May 2012; depths at Gauge 3A-4 in Central WCA-3A rose above 16 inches for a total of 22 days and water depths at Gauge 3A-28 remained above 16 inches throughout the entire period between March and May 2012. Due to the impounding effects of Tamiami Trail, water within southern WCA-3A (including 3A-28) tends to pond and is higher than depths experienced throughout more northern portions of WCA-3A. As stated in the WY11 ERTP Annual Assessment the 2011 dry season was the driest in 80 years with below normal amounts of rainfall and above average temperatures experienced across South Florida. Despite the historic drought conditions, water depths at Gauge 3A-28 still exceeded that required in the 2010 Incidental Take Statement, signifying that Gauge 3A-28 may not be the most appropriate representative of conditions throughout the foraging area. The USACE predicts that due to the inclusion of Gauge 3A-28, this trigger will continue to be exceeded in the future.*

Within the wetland systems of southern Florida, the annual hydrologic pattern is very consistent, with water levels rising over three feet during the wet season (June-November), and then receding gradually during the dry season (December-May). Wood storks nest during the dry season, and rely on the drying wetlands to concentrate prey items in the ever-narrowing wetlands (Kahl 1964). Because of the continual change in water levels during the wood stork nesting period, any one site may only be suitable for wood stork foraging for a narrow window of time when wetlands have sufficiently dried to begin concentrating prey and making water depths suitable for storks to access the wetlands (Gawlik 2002; Gawlik et al. 2004). Once the wetland has dried to where water levels are near the ground surface, the area is no longer suitable for wood stork foraging, and will not be suitable until water levels rise and the area is again repopulated with fish. Consequently, there is a general progression in the suitability of wetlands for foraging based on their hydroperiods, with the short hydroperiod wetlands being used early in the season, the mid-range hydroperiod sites being used during the middle of the nesting season, and the longest hydroperiod areas being used later in the season (Kahl 1964; Gawlik 2002). As the dry season progresses, water levels continue to decline in a north to south direction across WCA-3A.

V. Incidental Take Statement Analysis: Cape Sable Seaside Sparrow

A. Sparrow Population

1. ***Reinitiation Trigger****: If the annual CSSS population estimate falls below 2,915 sparrows [Mean population estimate 2001-2009 = 3,145 ± 230]), reinitiation of consultation must occur.*

Table 7. Cape Sable seaside sparrow bird count and population estimates by year as recorded by the Everglades National Park range-wide survey.

Population/ Year	CSSS-A		CSSS-B		CSSS-C		CSSS-D		CSSS-E		CSSS-F		Total	
	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST
2001	8	128	133	2,128	6	96	2	32	53	848	2	32	204	3,264
2002	6	96	119	1,904	7	112	0	0	36	576	1	16	169	2,704
2003	8	128	148	2,368	6	96	0	0	37	592	2	32	201	3,216
2004	1	16	174	2,784	8	128	0	0	40	640	1	16	224	3,584
2005	5	80	142	2,272	5	80	3	48	36	576	2	32	193	3,088
2006	7	112	130	2,080	10	160	0	0	44	704	2	32	193	3,088
2007	4	64	157	2,512	3	48	0	0	35	560	0	0	199	3,184
2008	7	112	NS	NS	3	48	1	16	23	368	0	0	34	544*
2009	6	96	NS	NS	3	48	2	32	27	432	0	0	38	608*
2010	8	128	119	1904	2	32	4	64	57	912	1	16	191	3,056
2011	11	176	NS	NS	11	176	1	16	37	592	2	32	62	992^
2012	21	336	NS	NS	6	96	14	224	46	736	4	64	91	1456^

BC Bird Count
EST Estimate
NS Not Surveyed
NA: Not Available

* These numbers do not reflect a significant decline in CSSS population. CSSS-B, the largest and most stable subpopulation, was not surveyed in 2008 or 2009. Adding the 2007 CSSS-B population estimate of 2,512 birds to those of the other subpopulations, the estimated total CSSS population size is 3,056 and 3,120 birds for 2008 and 2009, respectively.

^ These numbers do not reflect a significant decline in CSSS population. CSSS-B, the largest and most stable subpopulation, was not surveyed in 2011 or 2012. Adding the 2010 CSSS-B population estimate of 1,904 birds to those of the other subpopulations, the estimated total CSSS population size is 2,896 and 3,360 birds for 2011 and 2012, respectively.

2. ***ITS Exceeded****: No*

3. ***Reinitiation Required:*** *No*

*4. **Conclusion:** 2012 population estimates show an apparent increase in CSSS population size, however, CSSS-B, the largest of the CSSS subpopulations was not surveyed in either 2011 or 2012; therefore, the total population estimates for 2011 and 2012 are based upon the 2010 CSSS-B survey estimate of 1,904 birds. According to the 2012 CSSS survey, it appears that approximately 50% more birds were encountered within CSSS-A than during the 2011 survey. It is not clear, however, as to whether this increase is related to an increase in number of sites surveyed within CSSS-A or whether the numbers are a true reflection of population growth. During the 2011 and 2012 CSSS nesting season, S-12A-C, S-343A/B and S-334 were closed as per their individual requirements in the 2006 IOP, which was the most current operational plan for this period of time for the WCA-3-Everglades National Park-South Dade Conveyance System. IOP was designed to protect the CSSS to the maximum extent possible through water management operations, which resulted in closure periods for the aforementioned structures. The purpose of closure periods was to provide an improved opportunity for nesting within CSSS-A by maintaining water levels below ground level for a minimum of 60 consecutive days between March 1 and July 15, corresponding to the CSSS breeding season.*

During WY12, the S-12B, S-12C, S-343A/B and S-344 structures were actually closed prior to their IOP closure dates as per the WCA-3 Regulation Schedule. Thereby; further limiting flows into western Shark River Slough. Stage data from NP-205 indicate that water was below ground surface level as early as January 21, 2011 and remained below ground surface elevation until May 6, 2012, a period of 106 days. Within the FWS-defined CSSS breeding window of March 1 through July 15, a total of 66 days of continuously dry conditions were experienced at NP-205.

As shown in Table 7, CSSS-A has not recovered under IOP operations, but has remained relatively stable since its implementation in 2002. There are several factors that influence population size including competition, predation and prey availability; recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (i.e. the Allee effect) (Boulton et al. 2009; Virzi et al. 2009). USACE has fully complied with 2006 IOP CSSS protection measures.

B. Cape Sable Seaside Sparrow Habitat: Eastern Marl Prairies

*1. **Reinitiation Trigger:** Operations that raise water levels from groundwater to surface water conditions beyond 0.6 mile of S-332 Detention Areas prior to June 1.*

2. ***ITS Exceeded:*** *No*

3. ***Reinitiation Required:*** *No*

4. ***Conclusions:*** *USACE asked for clarification of the time period for this trigger (November 2010), however, until clarification is provided USACE is assuming that water levels must be below ground surface elevation prior to the FWS-defined CSSS breeding period starting March 1. Thus, USACE is delimiting the period of analysis for this trigger to March 1 through June 1, 2011, until otherwise directed. As shown in Figure 6 through Figure 8, stages at Gauge MRSHOP B1, MRSHOP C1 and NTS-10, respectively, were below ground surface elevation throughout most of the period between March 1 and June 1, 2011. Surface water conditions were experienced beginning May 20, 2012 at Gauge NTS-10 and on May 22, 2012 at Gauges MRSHOP B1 and MRSHOP C1. The USACE has determined that the change from groundwater to surface water conditions at these gauges were a result of 2.2 inches of rainfall as measured at Gauge NTS-10 between May 19 and May 21, 2012 and not the result of water management operations. USACE has concluded that based upon this trigger, reinitiation is not required at this time.*

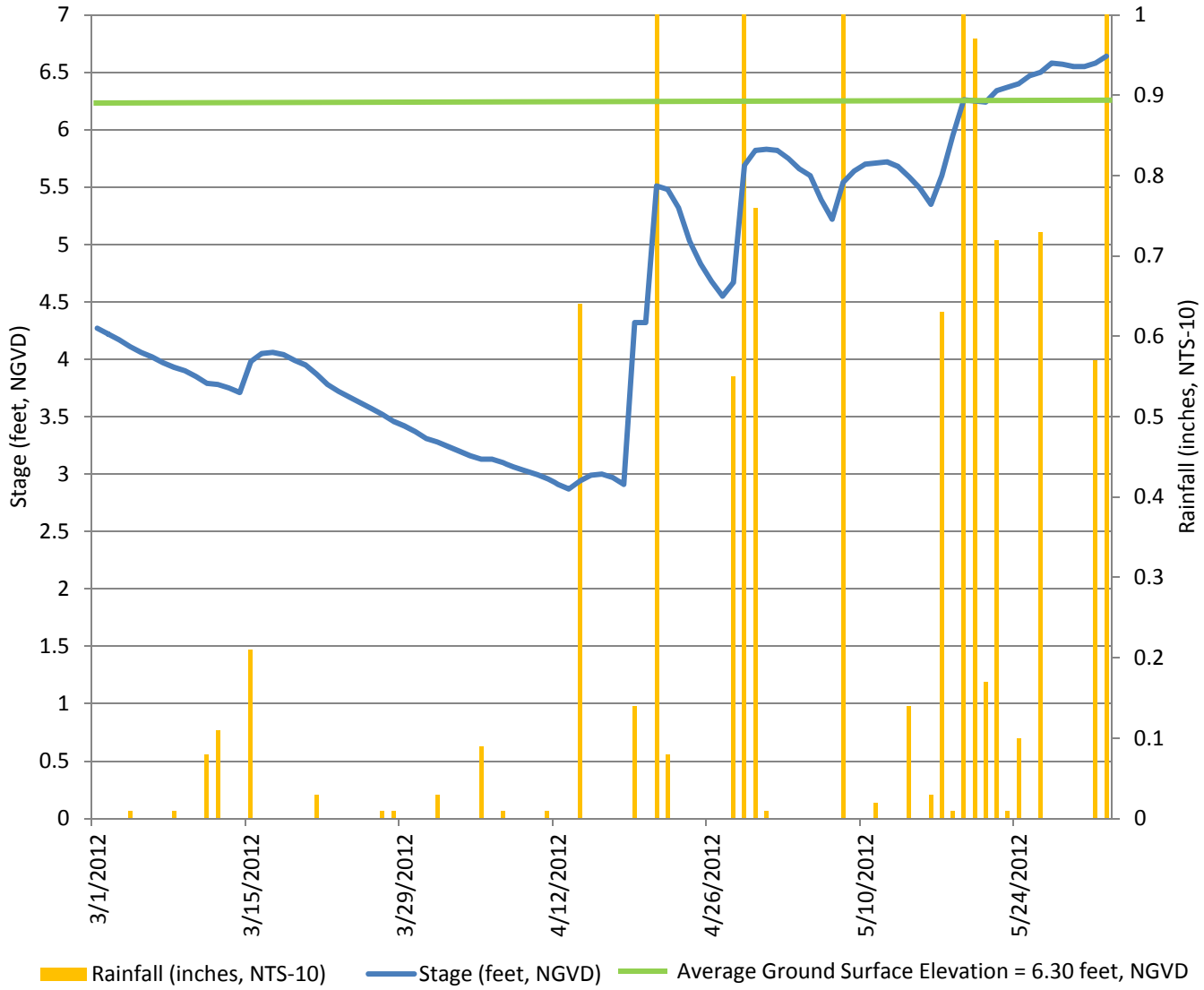

Figure 5. MRSHOP B1 stage (feet, NGVD) and rainfall (inches, Gauge NTS-10) between March 1 and June 1, 2012.

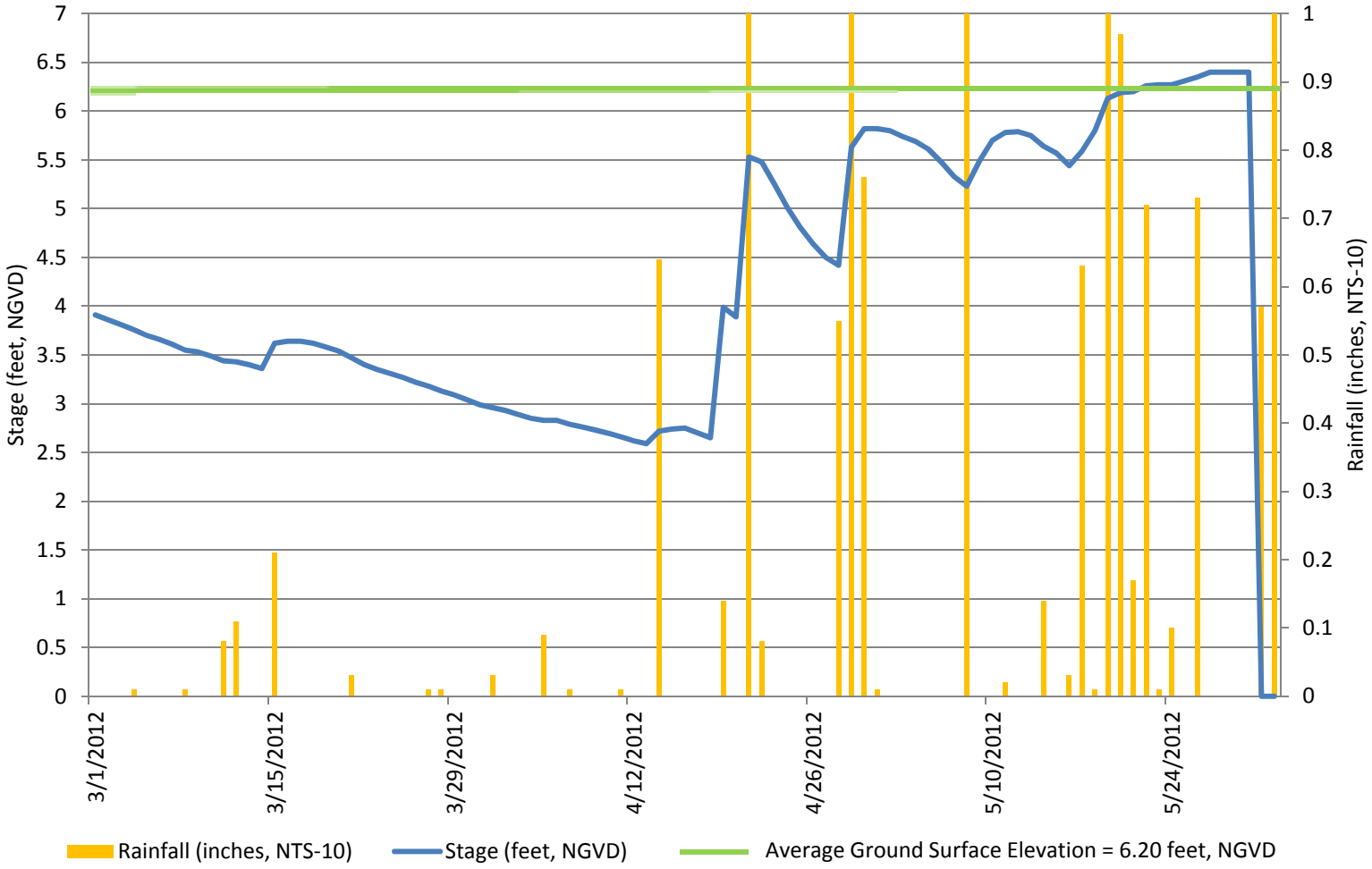

Figure 6. MRSHOP C1 stage (feet, NGVD) and rainfall (inches, Gauge NTS-10) between March 1 and June 1, 2012.

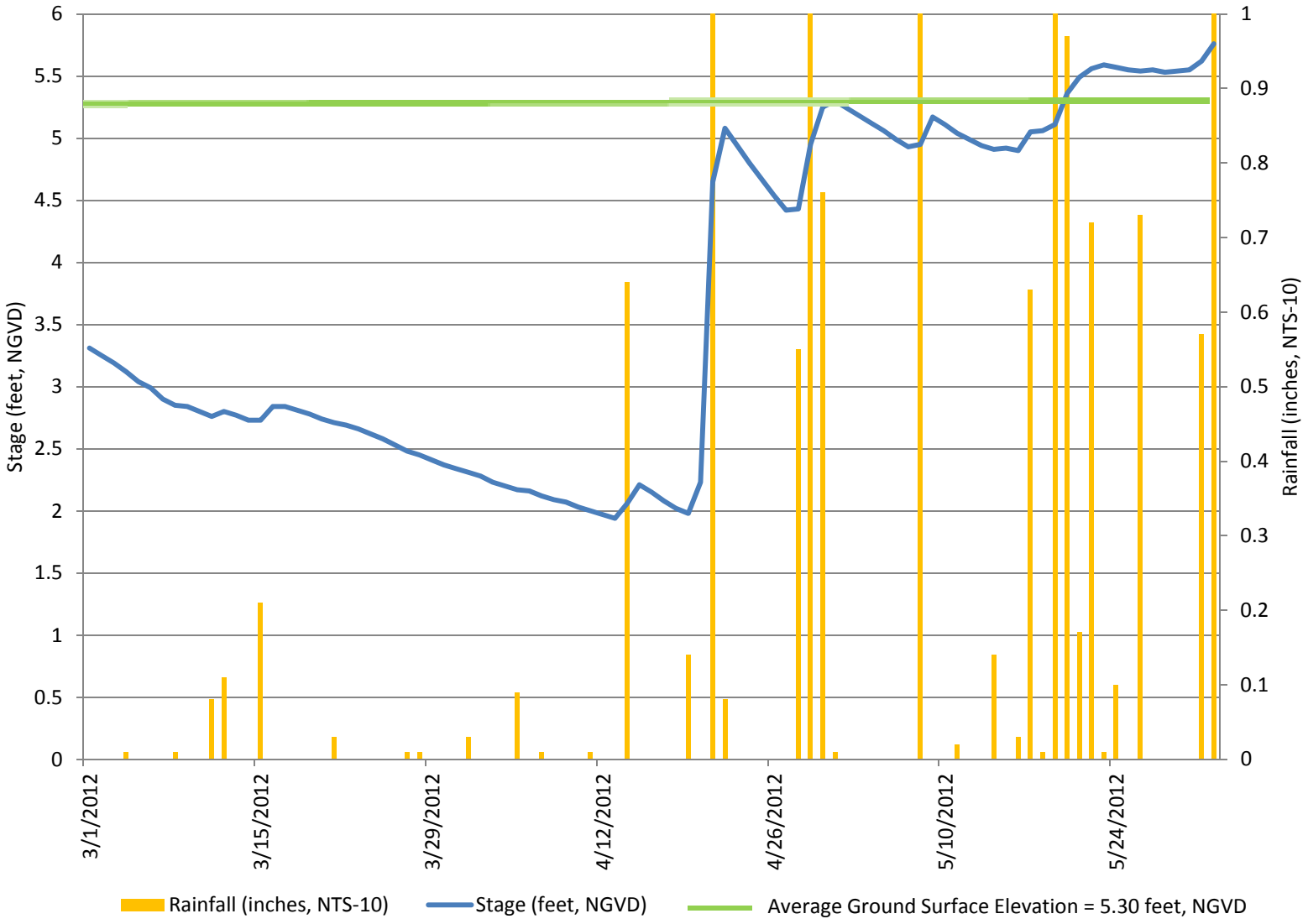

Figure 7. NTS-10 stage (feet, NGVD) and rainfall (inches) between March 1 and June 1, 2012.

C. Cape Sable Seaside Sparrow Habitat: Western Marl Prairies

1. ***Reinitiation Trigger****: Fewer than 60 consecutive days with water levels below ground surface at NP-205 between March 1 and July 15 due to water releases in 2 consecutive years.*

Table 8. Dates that water depths were less than 6.0 feet, NGVD at NP-205 and the number of consecutive dry days at NP-205 during the CSSS nesting window of March 1 and July 15.

Year	Start Date NP-205 < 6.0 feet, NGVD	End Date NP-205 < 6.0 feet, NGVD	Number of Consecutive Days Dry	Number of Consecutive Days Dry (March 1 to July 15)
2011	01/01/11	06/26/11	176	117
2012	01/21/12	05/05/12	106	66

2. ***ITS Exceeded:*** *No*

3. ***Reinitiation Required:*** *No*

4. ***Conclusion:*** *As shown in Figure 9, S-12A closed November 1 as per 2006 IOP, which at that time was the most current operational plan for WCA-3-Everglades National Park-South Dade Conveyance System. IOP was designed to protect the CSSS to the maximum extent possible through water management operations, which resulted in closure periods for the S-12A-C, S-243A/B and S-344 structures. The purpose of closure periods was to provide an improved opportunity for nesting within CSSS-A by maintaining water levels below ground level for a minimum of 60 consecutive days between March 1 and July 15, corresponding to the CSSS breeding season.*

During WY12, the S-12B, S-12C, S-343A/B and S-344 structures were actually closed prior to their IOP closure dates as per the WCA-3 Regulation Schedule thereby, further limiting flows into western Shark River Slough. Stage data from NP-205 indicate that water was below ground surface level as early as January 21, 2011 and remained below ground surface elevation until May 6, 2012, a period of 106 days. Within the FWS-defined CSSS breeding window of March 1 through July 15, a total of 66 days of continuously dry conditions were experienced at NP-205.

As shown in Table 7, CSSS-A has not recovered under IOP operations, but has remained relatively stable since its implementation in 2002. There are several factors that influence population size including competition, predation and prey availability; recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (i.e. the Allee effect) (Boulton et al. 2009; Virzi et al. 2009). USACE has fully complied with IOP CSSS protection measures and has concluded that reinitiation is not necessary at this time.

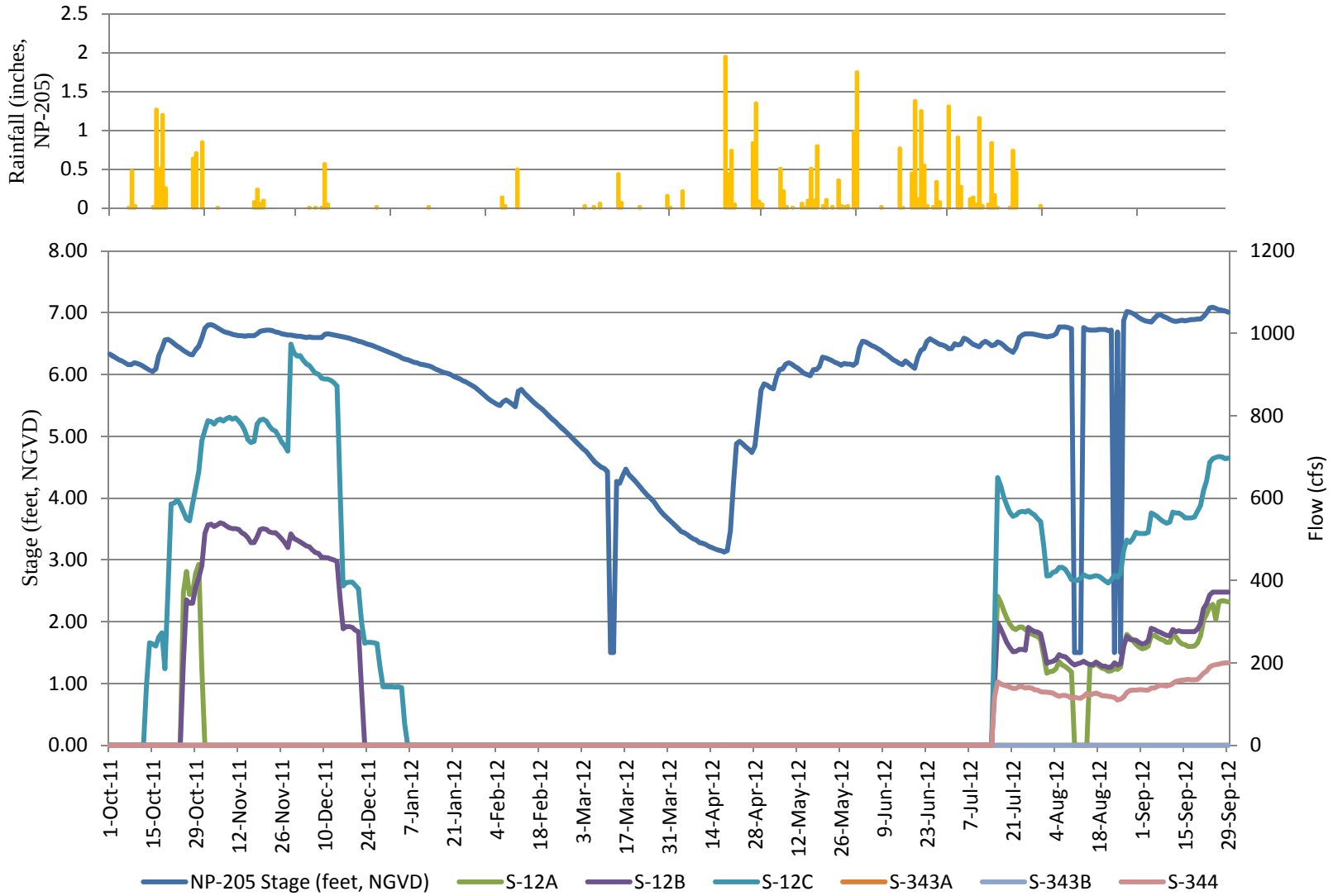

Figure 8. Water control structures S-12A-D, S-343A/B and S-344 FLOW (cfs), NP-205 stage (feet, NGVD) and NP-205 rainfall (inches) for WY12.

VI. ERTP Performance Measures and Ecological Targets

A. Cape Sable Seaside Sparrow

Performance Measure (PM)

A. NP-205 (CSSS-A): Provide a minimum of 60 consecutive days at NP-205 below 6.0 feet, NGVD beginning no later than March 15.

Table 9. Dates that water depths were less than 6.0 feet, NGVD at NP-205 and the number of consecutive dry days at NP-205 during the CSSS nesting window of March 1 through July 15.

Year	Start Date NP-205 < 6.0 feet, NGVD	End Date NP-205 < 6.0 feet, NGVD	Number of Consecutive Days Dry (NP-205 < 6.0 feet, NGVD) between March 1 and July 15
2011	3/1/2011	6/25/2011	117
2012	3/1/2012	5/6/2012	66

A total of 66 consecutive dry days were experienced at Gauge NP-205 between March 1 and July 15, 2011, therefore, this PM was met (Table 9). Please note due to the drier than normal conditions experienced during the early part of WY12, water levels were below ground surface elevation at NP-205 starting January 21, 2011. Please refer to Section V.C. (Cape Sable Seaside Sparrow Habitat: Western Marl Prairies) for more details.

CSSS Ecological Targets (ET)

ET-1 (NP-205, CSSS-A): Strive to reach a water level of ≤ 7.0 feet, NGVD at NP-205 by December 31 for nesting season water levels to reach 6.0 feet, NGVD by mid-March.

Table 10. NP-205 water levels (feet, NGVD) on December 31.

Date	NP-205 Stage (feet, NGVD)
31-Dec-10	4.27
31-Dec-11	6.36

As shown in Table 10, the December 31, 2011 stage at Gauge NP-205 was 6.36 feet NGVD and therefore, this PM was met.

ET-2 (CSSS): Strive to maintain a hydroperiod between 90 and 210 days (3 to 7 months) per year throughout sparrow habitat to maintain marl prairie vegetation.

Table 11. Discontinuous hydroperiod (number of days inundated) as measured at the specified gauges within each CSSS subpopulation between October 1, 2011 and September 30, 2012.

Sub-Population	Gauge	Discontinuous Hydroperiod (Days Inundated)	Within 90-210 Preferred Hydroperiod?
A	NP-205	253	No
	P-34	284	No
B	NP-44	175	Yes
C	E-112	259	No
D	EVER-4	357	No
E	NP-206	279	No
F	RG-2	167	Yes

A hydroperiod between 90 and 210 days was realized within CSSS-B and CSSS-F (Table 11). The hydroperiod was longer than preferred in CSSS-A, CSSS-C, CSSS-D and CSSS-E (Table 11). Figure 10 through Figure 16 depict the mean daily stage for the gauges indentified in Table 11. Figure 10 through Figure 16 were generated using EDEN. Please also note that all of the stage elevations except EVER-4 (Figure 14) are in feet North American Vertical Datum (NAVD) 88.

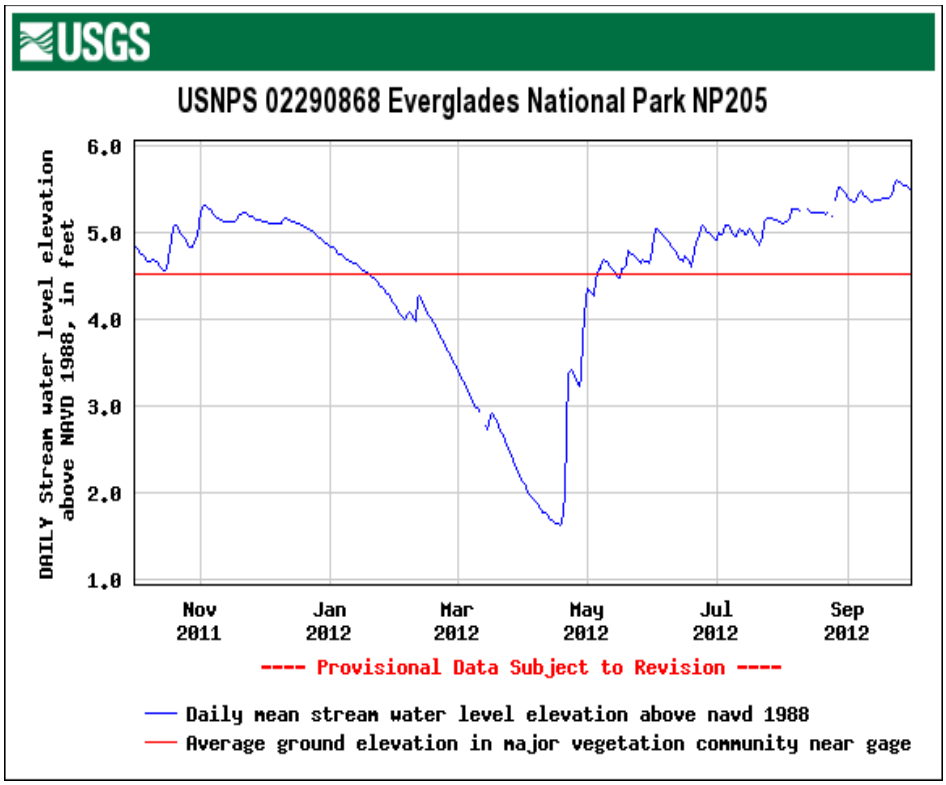

Figure 9. Daily mean stream water level at Gauge NP-205 (feet, NAVD88) for WY12.

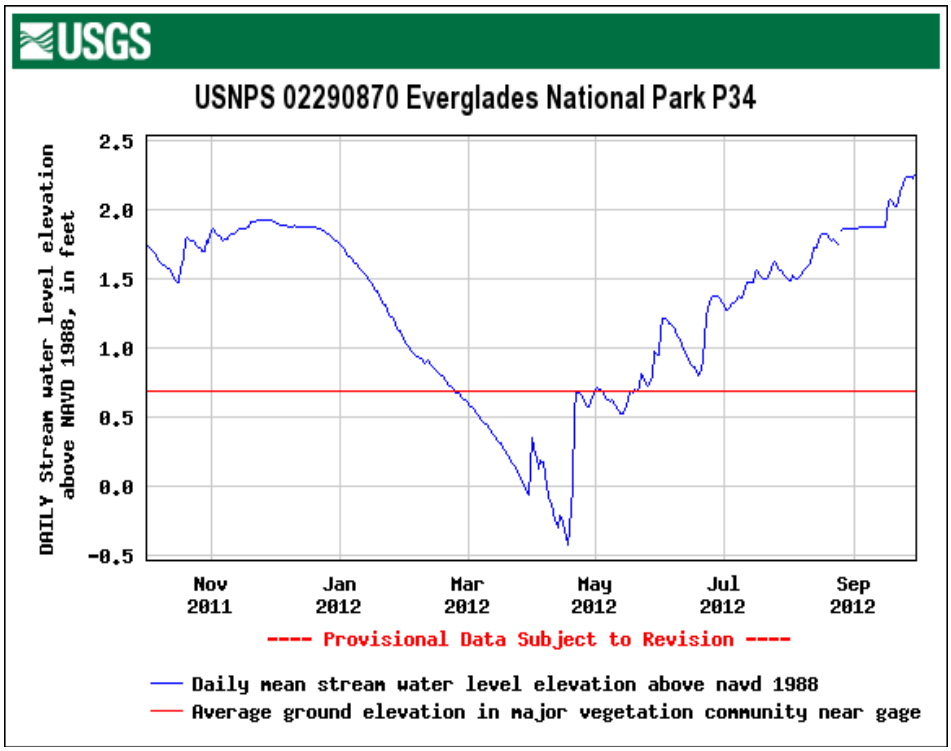

Figure 10. Daily mean stream water level at Gauge P-34 (feet, NAVD88) for WY12.

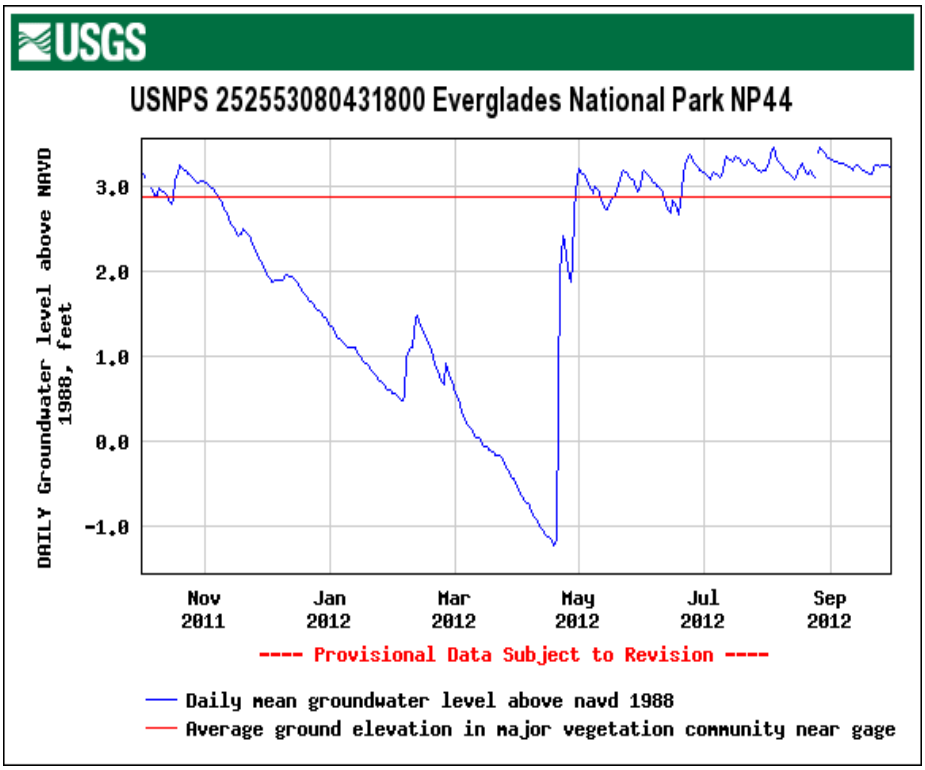

Figure 11. Daily mean groundwater level at Gauge NP-44 (feet, NAVD88) for WY12.

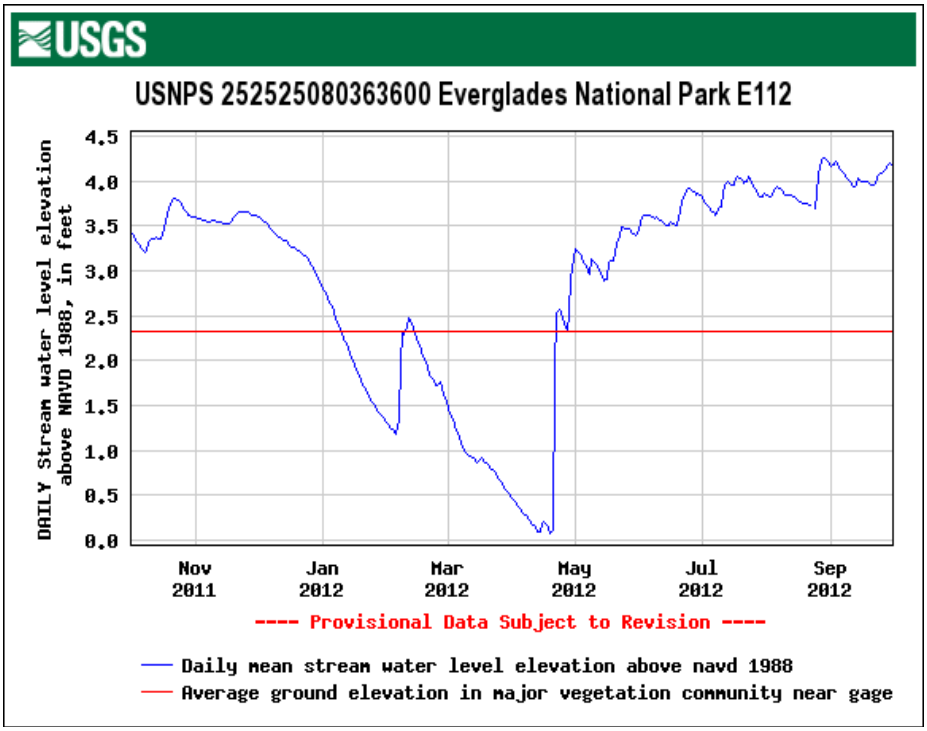

Figure 12. Daily mean stream water level at Gauge E-112 (feet, NAVD88) for WY12.

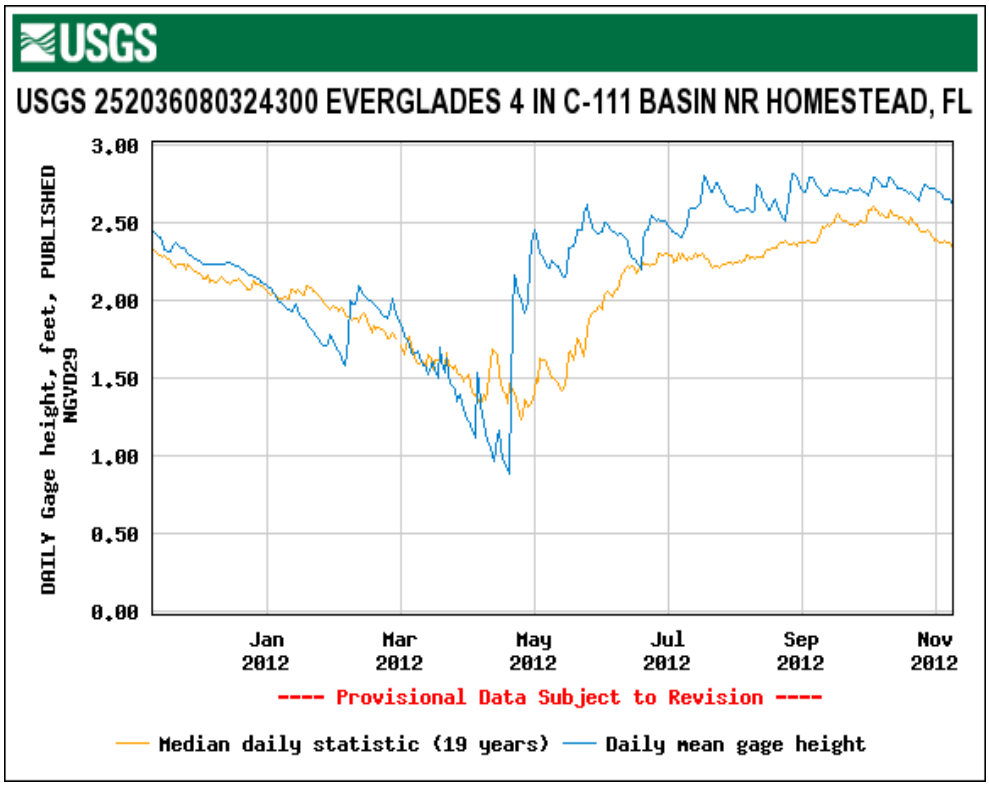

Figure 13. Daily mean gauge height Gauge EVER-4 (feet, NGVD) for WY12.

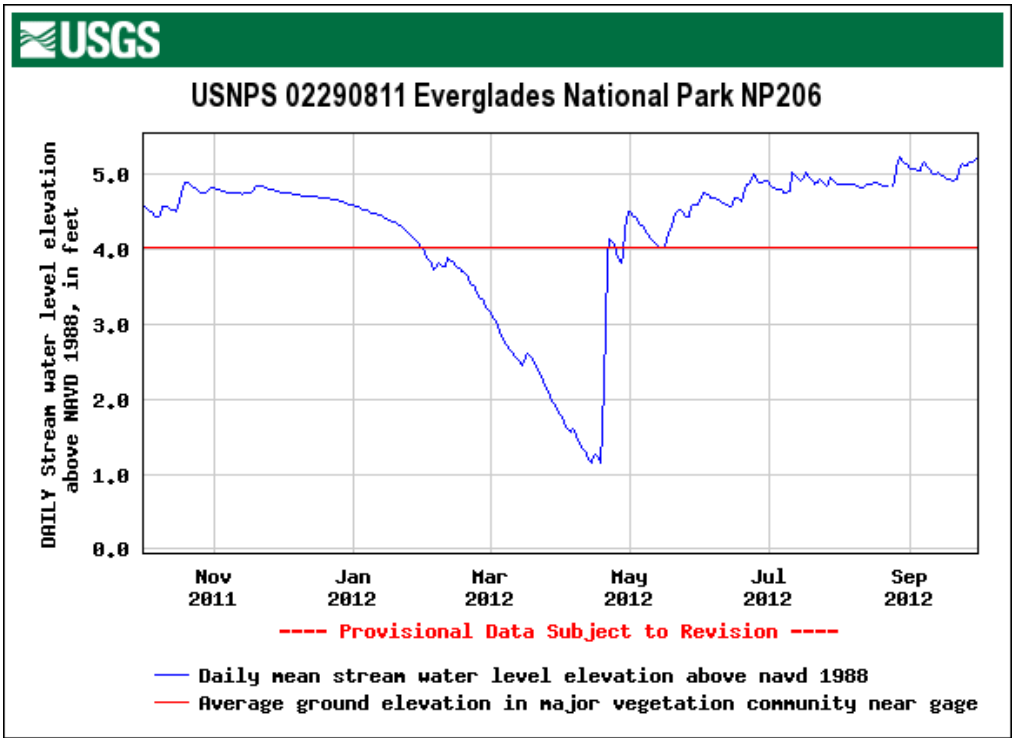

Figure 14. Daily mean stream water level at Gauge NP-206 (feet, NAVD88) for WY12.

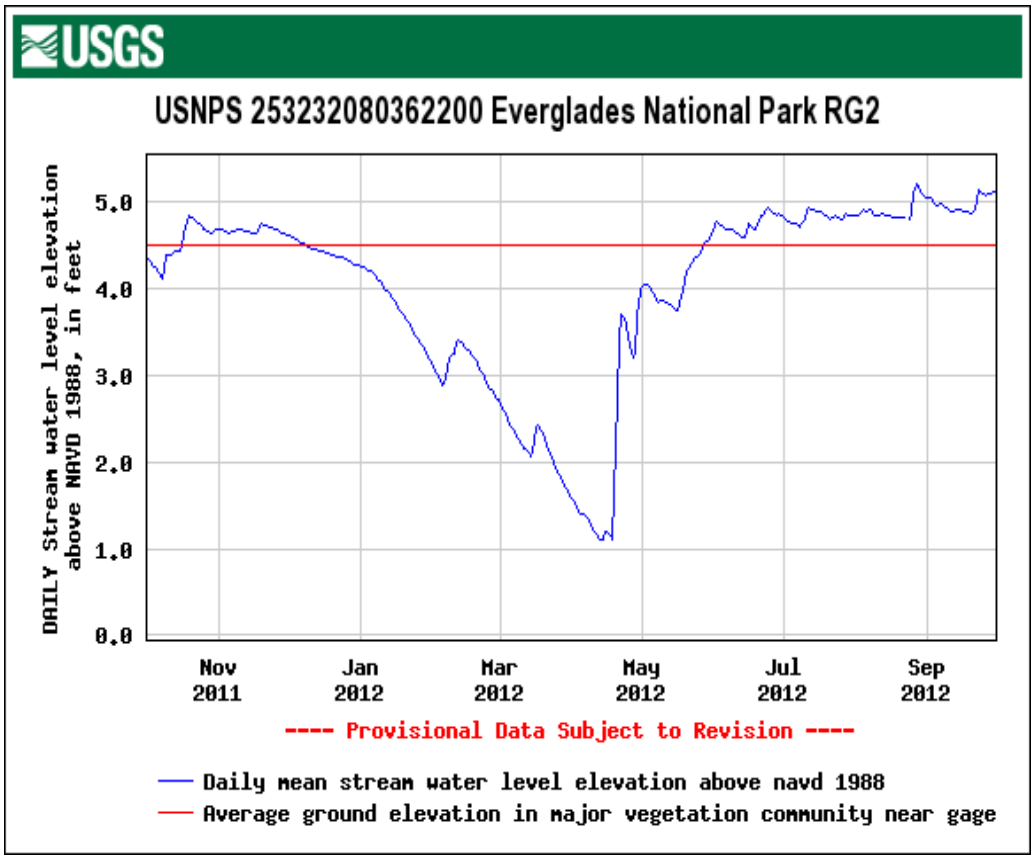

Figure 15. Daily mean stream water level at Gauge RG-2 (feet, NAVD88) for WY12.

B. Everglade Snail Kite

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Site 63, 64, 65])

Performance Measures

B. WCA-3A: For snail kites, strive to reach waters levels between 9.8 and 10.3 feet, NGVD by December 31, and between 8.8 and 9.3 feet, NGVD between May 1 and June 1.

Table 12. WCA-3AVG water levels (feet, NGVD) on December 31 and the maximum and minimum water levels between May 1 and June 1.

Year	Total Annual Precipitation (inches; WCA-3A Radar)	WCA-3AVG Stage (feet, NGVD) December 31	Minimum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)	Maximum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)
2010	-	9.57	-	-
2011	42.33	-	7.66	8.12
2012	46.45*	10.24	9.24	10.00

* Note: Precipitation data for August and September 2012 are not yet available; therefore, total precipitation is limited to October 1, 2011 through July 31, 2012. Total precipitation will be updated once the data become available. Note that precipitation data for WY11 was also updated from the WY11 ERTP Annual Assessment to include data from September 2011.

As shown in Table 12, water levels on December 31 were within the preferred depth range; however, water depths between May 1 and June 1 were higher than preferred during WY12 and can be attributed rainfall experienced throughout the region and the onset of the wet season. As previously discussed within Section III.C.1. (Rapid Recession Rates and Amplitude), USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession rates experienced during the 2012 dry season (i.e. January 1 through June 1 2011) and how future operations can avoid exceeding these thresholds. The review considered water management operations including releases through the WCA-3A outlet structures, evapotranspiration rates and WCA-3A inflows (e.g. rainfall). A spreadsheet analysis was employed to calculate the effect of S-333 water supply releases on WCA-3A stage. Figure 3 illustrates precipitation amounts along with S-333 and S-12 releases throughout the period between January 1 and May 31, 2012. As a result of this retrospective review, USACE has determined that the rapid recession rates experienced throughout this period were not a direct result of water management actions.

Since the majority of WCA-3A outlet structures (i.e. S-12A-D, S343A/B and S-344) were closed during this period, S-333 was opened to meet Lower East Coast water supply demands (as permitted by WCA-3A Regulation Schedule), and rapid recession rates were attributed to extremely high evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future.

C. WCA-3A: For apple snails, strive to reach water levels between 9.7 and 10.3 feet, NGVD by December 31 and between 8.7 and 9.7 feet, NGVD between May 1 and June 1.

Table 13. WCA-3AVG water levels (feet, NGVD) on December 31 and the minimum and maximum water levels between May 1 and June 1.

Year	Total Annual Precipitation (inches; WCA-3A Radar)	WCA-3AVG Stage (feet, NGVD) December 31	Minimum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)	Maximum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)
2010	-	9.57	-	-
2011	42.33	-	7.66	8.12
2012	46.45*	10.24	9.24	10.00

* Note: Precipitation data for August and September 2012 are not yet available; therefore, total precipitation is limited to October 1, 2010 through July 31, 2012. Total precipitation will be updated once the data become available.

As shown in Table 13, water levels on December 31 were within the preferred depth range; however, water depths between May 1 and June 1 were higher than preferred

during WY12 and can be attributed rainfall experienced throughout the region and the onset of the wet season. Please refer to Section III.C.1. (Rapid Recession Rates and Amplitude) and Section IV.B, PM-B for further details.

D. WCA-3A (Dry Season Recession Rate): Strive to maintain a recession rate of 0.05 feet per week from January 1 to June 1 (or onset of the wet season). This equates to a stage difference of approximately 1.0 feet between January and the dry season low.

Table 14. Observed weekly recession rate from January 1 through June, 2012 based upon WCA-3AVG. Positive values indicate falling water, negative values indicate rising water.

Week Ending	Recession Rate (feet per week)	Week Ending	Recession Rate (feet per week)
7-Jan	0.10*	24-Mar	0.11
14-Jan	0.15	31-Mar	0.13
21-Jan	0.00	7-Apr	0.11
28-Jan	0.10	14-Apr	0.11
4-Feb	0.07	21-Apr	-0.02
11-Feb	-0.13	28-Apr	0.09
18-Feb	0.06	5-May	-0.09
25-Feb	0.10	12-May	0.01
3-Mar	0.09	19-May	-0.16
10-Mar	0.06	26-May	-0.29
17-Mar	0.06	2-Jun	-0.29

* Note: Numbers are highlighted to correspond to FWS Multi-Species Transition Strategy (MSTS) stoplight key below (FWS 2010).

FWS 2010 Key:

FWS MSTS Recession Rate (feet per week)
> .10
> 0.05 but ≤ 0.10
0.05
≥ 0.00 but < 0.05
< 0.00

Table 15. Observed WCA-3A stage difference from January 1 through June 1 based upon the WCA-3AVG. Values greater than 1.0 represent stages differences that were greater than recommended between January and June 1. Positive values indicate falling water, negative values indicate rising water.

Year	WCA-3A Stage Difference January 1 to June 1 (WCA-3AVG)
2011	1.90
2012	-0.39

As shown in Table 14 recession rates were greater than preferred during January 1 through June 1 2012, however, the dry season stage difference did not exceed the preferred range (Table 15). Please refer to Section III.C.1. (Rapid Recession Rates and Amplitude) and Section IV.B, PM-B for further details. Rising water during late May to early June 2012 can be attributed rainfall experienced throughout the region and the onset of the wet season.

E. WCA-3A (Wet Season Rate of Rise): Manage for a monthly rate of rise ≤0 .25 feet per week to avoid drowning of apple snail egg clusters.

Table 16. Weekly rate of rise (feet/week) based on the WCA-3AVG for the months of February through September. Positive values indicate falling water, negative values indicate rising water.

Year	Average Weekly Rate of Rise (feet/week) based upon WCA-3AVG stage							
	February	March	April	May	June	July	August	September
2011	0.08	0.06	0.16	0.10	-0.23	-0.08	-0.15	-0.09
2012	0.04	0.12	0.02	-0.15	-0.10	0.01	-0.09	-0.18

Table 16 indicates that the average weekly rate of rise did not exceed 0.25 feet per week during the months of February through September 2012; therefore, PM-E was achieved.

Ecological Target

ET-3. WCA-3A (Dry Years): Strive to maintain optimal snail kite foraging habitat by allowing water levels to fall below ground surface level between 1 in 4 and 1 in 5 years (208-260 weeks average flood duration) between May 1 and June 1 to promote regenerations of marsh vegetation. Do not allow water levels below ground surface for more than 4 to 6 weeks to minimize adverse effects on apple snail survival.

Table 17. Number of days during May 1 to June 1 in which water levels were below ground surface level as measured at Gauge 3A-3 (Site 63), 3A-4 (Site 64) and 3A-28(Site 65).

Year	Gauge 3A-3	Gauge 3A-4	Gauge 3A-28
2011	32	32	0
2012	31	31	0

As shown in Table 17 and Figure 17, water levels fell below ground surface elevation for 31 days at Gauge 3A-3 and Gauge 3A-4 during the May 1 to June 1, 2011 time period. As a result it is likely that apple snail egg production and survival were affected throughout large areas in WCA-3A. As per the ERTP BO, in July 2011, USACE contracted Phillip Darby, Ph.D to monitor apple snails within WCA-3A. Further information concerning apple snail population estimates will be available in the future as a result of Dr. Darby's efforts. Preliminary data reveal very few apple snails were encountered within WCA-3A during 2012.

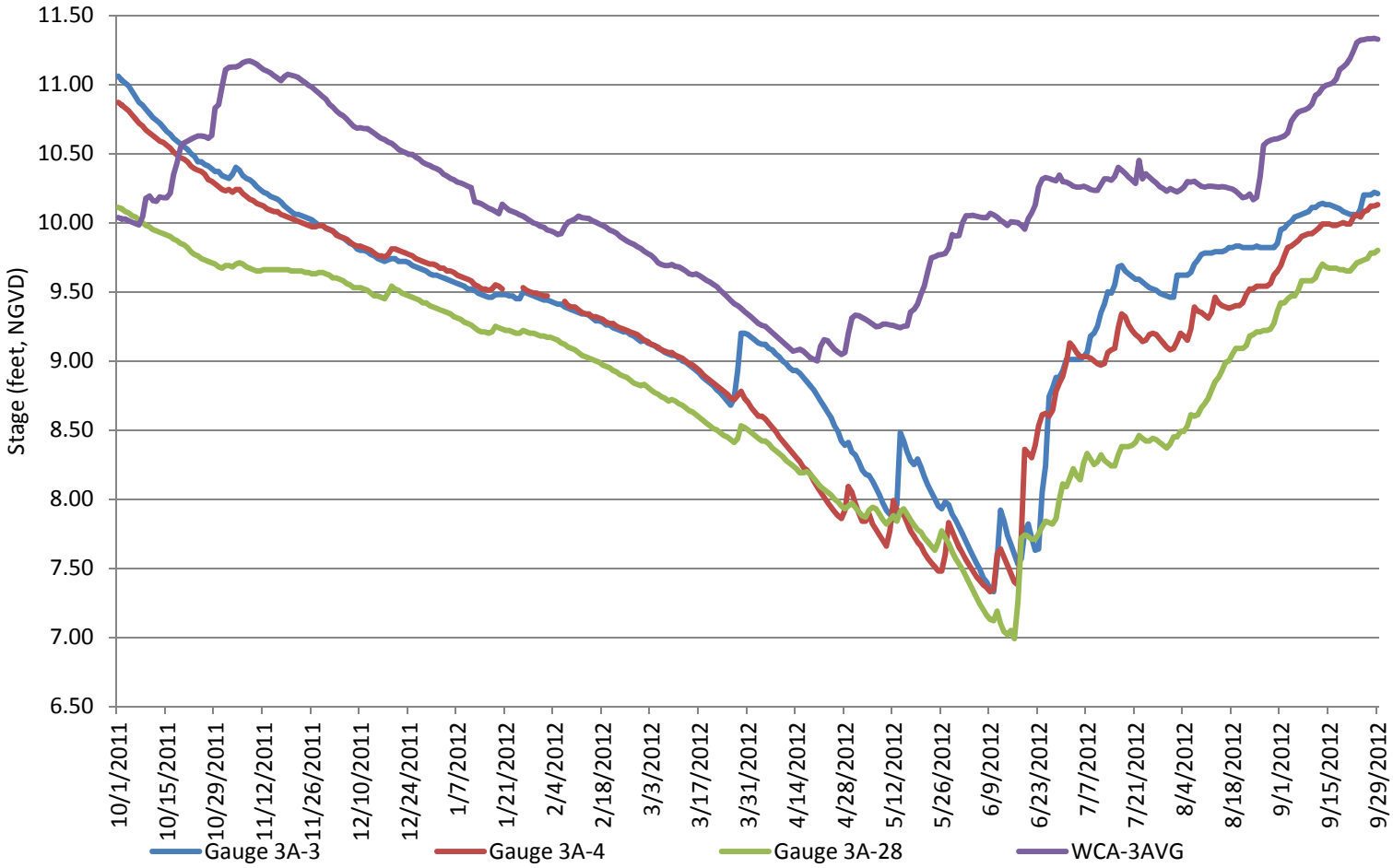

Figure 16. WCA-3A Stage (feet, NGVD) as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and WCA-3AVG (average of Gauges 3A-3, 3A-4 and 3A-28) during WY12.

C. Wood Stork and Wading Birds

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Sites 63, 64, 65])

Performance Measures

F. WCA-3A Dry Season Recession Rate: Recession rate of 0.07 feet per week, with an optimal range of 0.06 to 0.07 feet per week, from January 1 to June 1.

Table 18. Observed weekly recession rate from January 1 through June 1, 2012 based upon WCA-3AVG. Positive values indicate falling water, negative values indicate rising water.

Week Ending	Recession Rate (feet per week)	Week Ending	Recession Rate (feet per week)
7-Jan	0.10	24-Mar	0.11
14-Jan	0.15	31-Mar	0.13
21-Jan	0.00	7-Apr	0.11
28-Jan	0.10	14-Apr	0.11
4-Feb	0.07	21-Apr	-0.02
11-Feb	-0.13	28-Apr	0.09
18-Feb	0.06	5-May	-0.09
25-Feb	0.10	12-May	0.01
3-Mar	0.09	19-May	-0.16
10-Mar	0.06	26-May	-0.29
17-Mar	0.06	2-Jun	-0.29

* Note: Numbers are highlighted to correspond to FWS MSTS stoplight key below (FWS 2010).

FWS 2010 Key:

FWS MSTS Recession Rate (feet per week)
< 0.17
> 0.07 but ≤ 0.17
Preferred 0.06-0.07
≥ -0.05 but < 0.06
< -0.05

Recession rates for wood storks and wading birds, particularly within the early dry season were within, or near the preferred range (Table 18); however, as the dry season progressed recession rates became faster than preferred. In addition, due to rainfall events, reversals were experienced during February, April and again at the onset of the wet season in May. As previously discussed within Section III.C.1. (Rapid Recession Rates and Amplitude), USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession rates experienced during the 2011 dry season (i.e. January 1 through June 1 2011) and how future operations can avoid exceeding these thresholds. The review considered water management operations including releases through the WCA-3A outlet structures, evapotranspiration rates and WCA-3A inflows (e.g. rainfall). A spreadsheet analysis was employed to calculate the effect of S-333 water supply releases on WCA-3A stage. Figure 3 illustrates precipitation amounts along with S-333 and S-12 releases throughout the period between January 1 and May 31, 2011. As a result of this retrospective review, USACE has determined that the rapid recession rates experienced throughout this period were not a direct result of water management actions.

G. WCA-3A (Dry Season): Strive to maintain areas of appropriate foraging depths (5-25 cm) within the Core Foraging Area (18.6 mile radius, CFA) of any active wood stork colony.

In order to assess WY12 in relation to PM-G, an analysis of wood stork foraging water depths in WCA-3 was performed for the time period of October 1, 2011 through September 30, 2012. The following information regarding wood stork colonies, locations, gauges and foraging depths was provided by Lori Miller (FWS, 2010). All data used herein were obtained from EDEN; all data is considered provisional and subject to change, unless otherwise noted.

Wood storks are known to forage in a 360-degree radius of 30 km (18.6 statute miles) from an active colony (FWS 2010; Cox et al. 1994). The optimal water depth for wood storks is 14-15 cm with suboptimal dry water depths ranging from -9 to 4 cm and suboptimal wet water depths ranging from 26 to 40 cm (FWS 2010; Beerens and Cook, unpublished report 2010). Table 19 lists wood stork colonies with core foraging area (CFA) extending into WCA-3A and WCA-3B. Colony locations and CFAs are depicted in Figure 18.

Table 19. Wood stork colonies with Core Foraging Areas (CFAs) in WCA-3.

COLONY	COUNTY	LAST ACTIVE	2011 NESTING PAIRS	LATITUDE	LONGITUDE
2B Melaleuca	Broward	2001	NA	26.163	-80.348
Crossover	Miami-Dade	2009	0	25.925	-80.835
Jetport	Miami-Dade	2009	0	25.885	-80.844
Jetport South	Miami-Dade	2011	350	25.805	-80.849
3B Mud East	Miami-Dade	2009	0	25.798	-80.494
Tamiami Trail East	Miami-Dade	2010	0	25.758	-80.508
Tamiami Trail East 2	Miami-Dade	2010	0	25.760	-80.508
Tamiami Trail West	Miami-Dade	2011	400	25.760	-80.545
Grossman Ridge West*	Miami-Dade	2011	**60**	25.636	-80.653

* No data for this colony is available at this time. USACE contacted FWS on October 5, 2011 to obtain the data, however, FWS, did not yet have the information.

Table 20 lists gauges analyzed for wood stork CFA within WCA-3A and WCA-3B using elevations obtained through EDEN. Gauge locations are depicted in Figure 19. Table 21 identifies the gauges that are included within the CFA of each active wood stork colony. Please note that although PM-G is specific to active wood stork colonies, the water depth analysis performed within this section examines water depths at each potential colony site listed within Table 19 to determine whether water depths would have been within the appropriate foraging range for the species.

Table 20. Gauges analyzed for wood stork CFA water depths.

GAUGE	DESCRIPTION
3A3 (Site 63)	Northeastern WCA-3A
3A4 (Site 64)	Central WCA-3A
3ASW	West-central WCA-3A
3A28 (Site 65)	Southern WCA-3A
3B2 (Site 71)	Central WCA-3B
3BS1W1	Southeastern WCA-3B

Figure 17. Location of wood stork colonies and gauges used for evaluation of PM-G. Circles represent the CFA of the colony.

Table 21. List of gauges that occur within the CFA of the identified wood stork colonies.

	GAUGE									
COLONY	3A3	3A4	3ASW	3A28	3B2	3BS1W1	NE-1	NP-203	NP-205	NP-206
Tamiami East		X		X	X	X	X	X		X
Tamiami East 2		X		X	X	X	X	X		X
Tamiami West (NESRS)		X		X	X	X	X	X		X
2B Melaleuca	X									
Crossover (WCA-3A)		X	X	X	X				X	
Jetport (WCA-3A)		X	X	X	X				X	
Mud East (WCA-3B)		X		X	X	X	X	X		X
Jetport South (WCA-3A)		X	X	X	X		X		X	
Grossman's Ridge West				X	X	X	X	X	X	X

The wood stork analysis employed daily stage data for the gauges listed in Table 20 in feet NGVD29. Water depths were obtained by subtracting the average ground elevations (obtained from EDEN and converted to NGVD29) from the daily stage in feet NGVD29. Water depths were then converted to centimeters by multiplying values by 30.48 (30.48 cm = 1 foot). These water depths, now in centimeters, were then used to graph daily foraging

depths in Microsoft Excel. On these graphs, the red-yellow-green light method was used to illustrate WY11 water depths. Table 22 illustrates the values used for the red-yellow-green light method. Graphs for gauges within WCA-3 are included within this document as Figure 19 and Figure 20.

Table 22. Foraging water depths in centimeters using the Red-Yellow-Green light method (red = undesirable/unavailable, yellow = suboptimal and green = optimal).

Water Depth (centimeters)
< -9 cm
-9 to 4 cm
5 to 25 cm
26 to 40 cm
> 40 cm

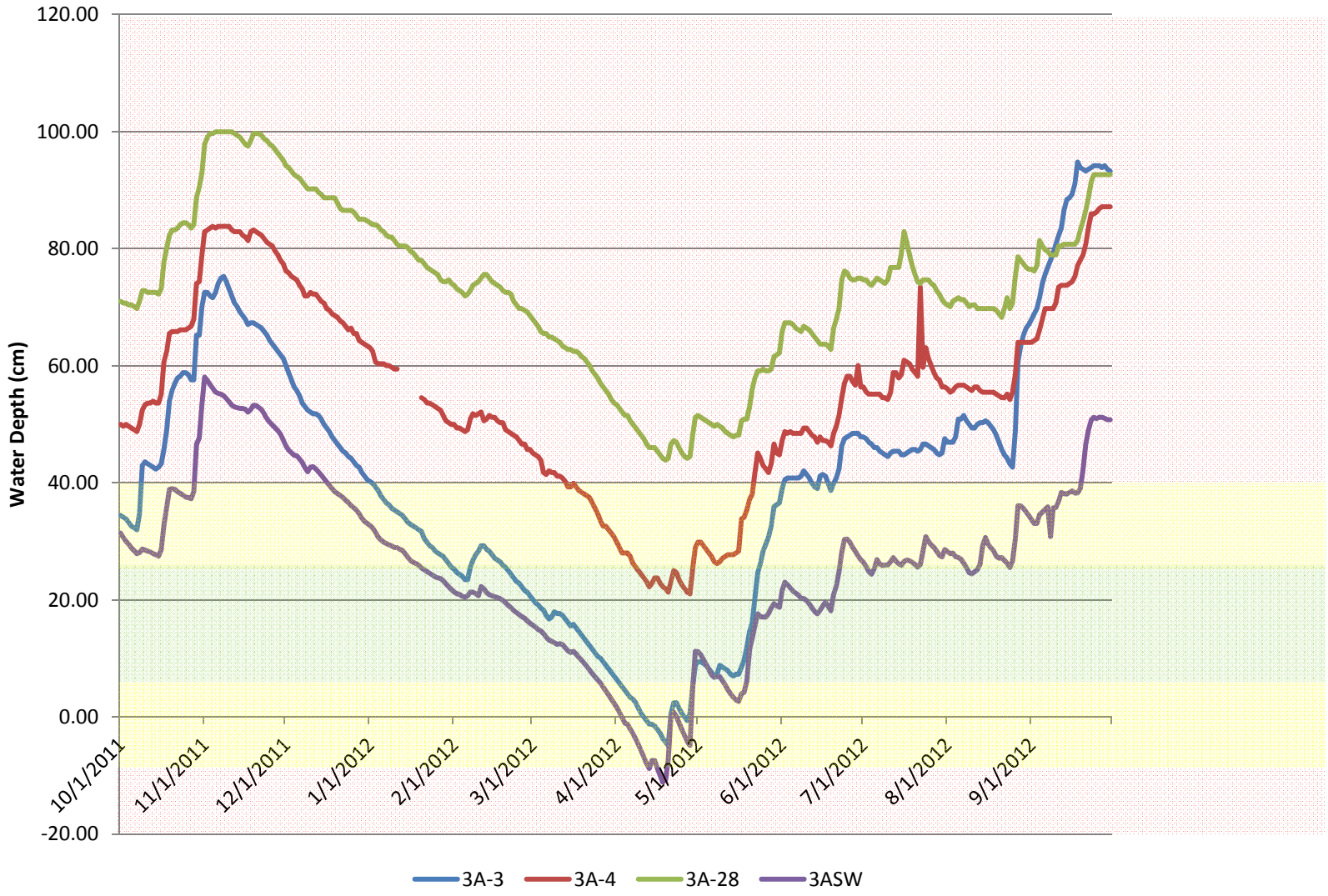

Figure 18. Wood stork foraging depths within WCA-3A as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and Gauge 3ASW.

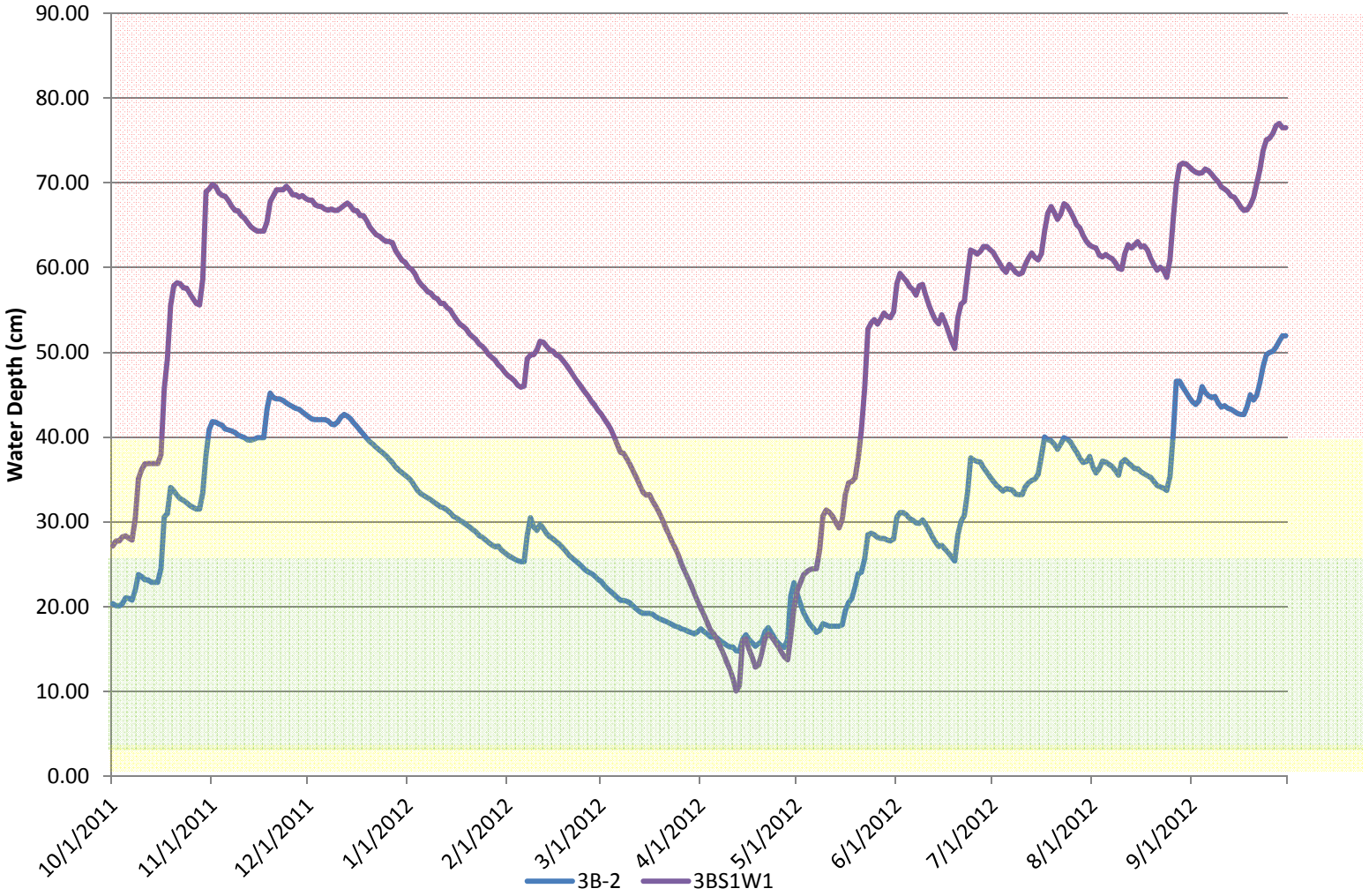

Figure 19. Wood stork foraging depths with WCA-3B as measured at Gauge 3B-2 and Gauge 3BS1W1.

As illustrated in Figure 19, suitable water depths (optimal/sub-optimal) for wood stork foraging within WCA-3A were available throughout much of WY12 at Gauge 3A-3 and 3ASW. Appropriate foraging depths were experienced between April and June at Gauge 3A-4 and were not attained at Gauge 3A-28 in southern WCA-3A during WY12. In WCA-3B, water depths at Gauge 3B-2 were appropriate for wood stork foraging throughout much of WY12, with the exception of periods during November and December 2011 and mid August through September 2012 (Figure 20). Depths experienced at Gauge 3BS1W1 were also deeper than those required to support foraging wood storks. As shown in Table 18, several reversals occurred due to rainfall events during the later portion of the dry season. Between November 2011 and February 2012, suitable foraging depths were available in the area around Gauge 3A-3 and Gauge 3ASW, after which time, water depths dropped below suitable levels. For further information regarding water management activities during the wood stork breeding season, please refer to Section III.C.1 (Rapid Recession Rates and Amplitude). The 2012 South Florida Water Management District Annual Wading Bird Report is expected to be available in December 2012 (www.sfwmd.gov).

H. WCA-3A (Dry Season): Strive to maintain areas of appropriate foraging depths (5-15 cm) within the Core Foraging Area (7 to 9 mile radius) of any active white ibis or snowy egret colony.

In order to assess WY12 in relation to PM-H, an analysis of white ibis foraging water depths in WCA-3 was performed for the time period of October 1, 2011 through September 30, 2012. The following information regarding white ibis colonies, locations, gauges and foraging depths was provided by Lori Miller (FWS, 2010). All data used herein were obtained from EDEN, all data is considered provisional and subject to change, unless otherwise noted.

White ibis are known to forage in a 360-degree radius of 10 km (6.2 statute miles) from an active colony (FWS 2010; Bancroft et al. 1994). The optimal water depth for white ibis foraging in WCA-3 is 7-16 cm with suboptimal dry water depths ranging from -15 to 6 cm and suboptimal wet water depths ranging from 17 to 31 cm (FWS 2010, Beerens 2008). Table 23 lists active white ibis colonies with CFAs extending into WCA-3 from 2002 through 2010. Colony locations and CFAs are depicted in Figure 21.

Table 23. Number of active white ibis nests in the ERTP action area as reported by the South Florida Wading Bird Reports from 2002 through 2011.

COLONY	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tamiami West	400	150		500	600	400		5,000		+
3B Mud East		122	1,153		203					
6th Bridge						10,661	1,000		124	5,000
Alley North	20,000	6,033	16,000	12,750	13,566	8		17,200	500	
Anhinga Alley										
Big Melaleuca										
Big Pond										
Cypress City						200				
East Central Ag										
Ganga								9		
Heron Alley										
L-67					16					
Pocket										
Unnamed 2			56							
West Ag Canal										
West Central Ag										
Total	20,400	6,305	17,209	13,250	14,385	11,269	1,000	22,209	624	

+: Indicates species present and nesting, but unable to determine numbers.

Table 24 lists gauges analyzed for white ibis CFA within WCA-3A and WCA-3B using elevations obtained through EDEN. Gauge locations are depicted in Figure 21. Table 25 identifies the gauges that are included within the CFA of each active white ibis colony. Please note that although PM-H is specific to active white ibis colonies, the water depth analysis performed within this section examines water depths at each potential colony site listed within Table 23 to determine whether water depths would have been within the appropriate foraging range for the species.

Table 24. Gauges analyzed for white ibis CFA water depths.

GAUGE	DESCRIPTION
3A3 (Site 63)	Northeastern WCA-3A
3A4 (Site 64)	Central WCA-3A
3ASW	West-central WCA-3A
3A28 (Site 65)	Southern WCA-3A
3B2 (Site 71)	Central WCA-3B
3BS1W1	Southeastern WCA-3B

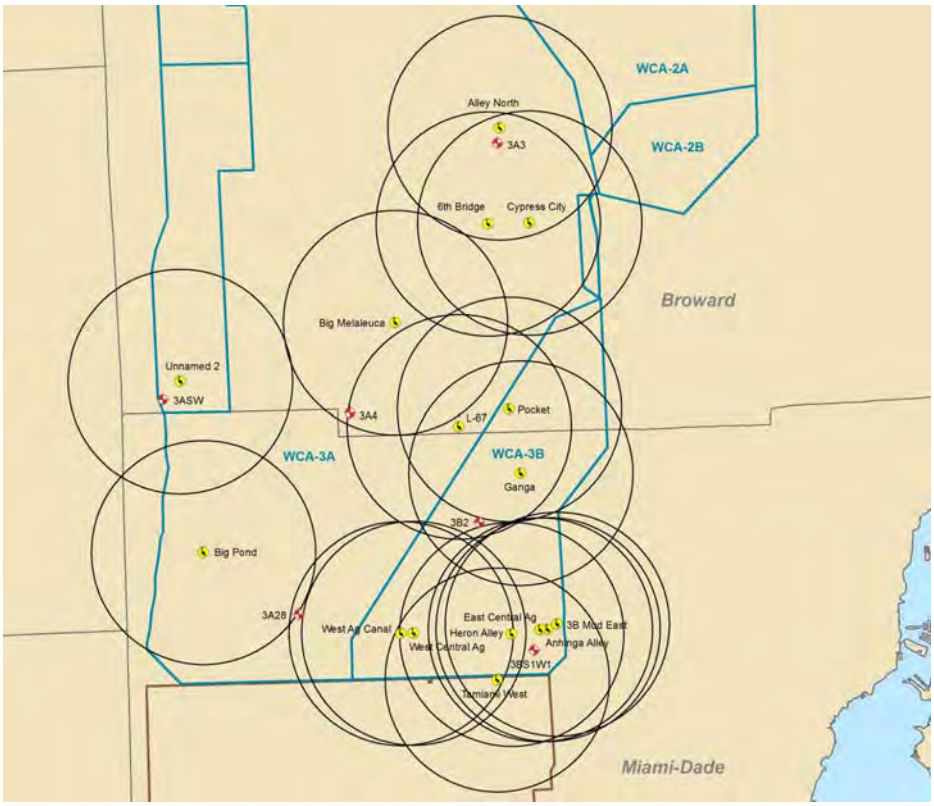

Figure 20. Location of white ibis colonies and gauges used for evaluation of PM-H. Circles represent the CFA of the colony.

Table 25. List of gauges that occur within the CFA of the identified white ibis colonies.

COLONY NAME	GAUGE					
	3A3	3A4	3ASW	3A28	3B2	3BS1W1
Tamiami West (NESRS)						X
Mud East (WCA-3B)					X	X
6th Bridge	X					
Alley North	X					
Anhinga Alley					X	X
Big Melaleuca		X				
Big Pond				X		
Cypress City	X					
East Central Ag					X	X
Ganga					X	
Heron Alley					X	X
L-67		X			X	
Pocket					X	
Unnamed 2			X			
West Ag Canal				X		X
West Central Ag				X	X	X

The white ibis analysis employed daily stage data for the gauges listed in Table 24 in feet NGVD29. Water depths were obtained by subtracting the average ground elevations (obtained from EDEN and converted to NGVD29) from the daily stage in feet NGVD29. Water depths were then converted to centimeters by multiplying values by 30.48 (30.48 cm = 1 foot). These water depths, now in centimeters, were then used to graph daily foraging depths in Microsoft Excel. On these graphs, the red-yellow-green light method was used to illustrate WY11 water depths. Table 26 illustrates the values used for the red-yellow-green light method. Graphs for gauges within WCA-3 are included within this document as Figure 22 and Figure 23.

Table 26. Foraging water depths in centimeters using the Red-Yellow-Green light method (red=undesirable/unavailable, yellow=suboptimal and green=optimal).

Water Depth (centimeters)
<-16 cm
-15 to 6 cm
7 to 16 cm
17 to 31 cm
>32 cm

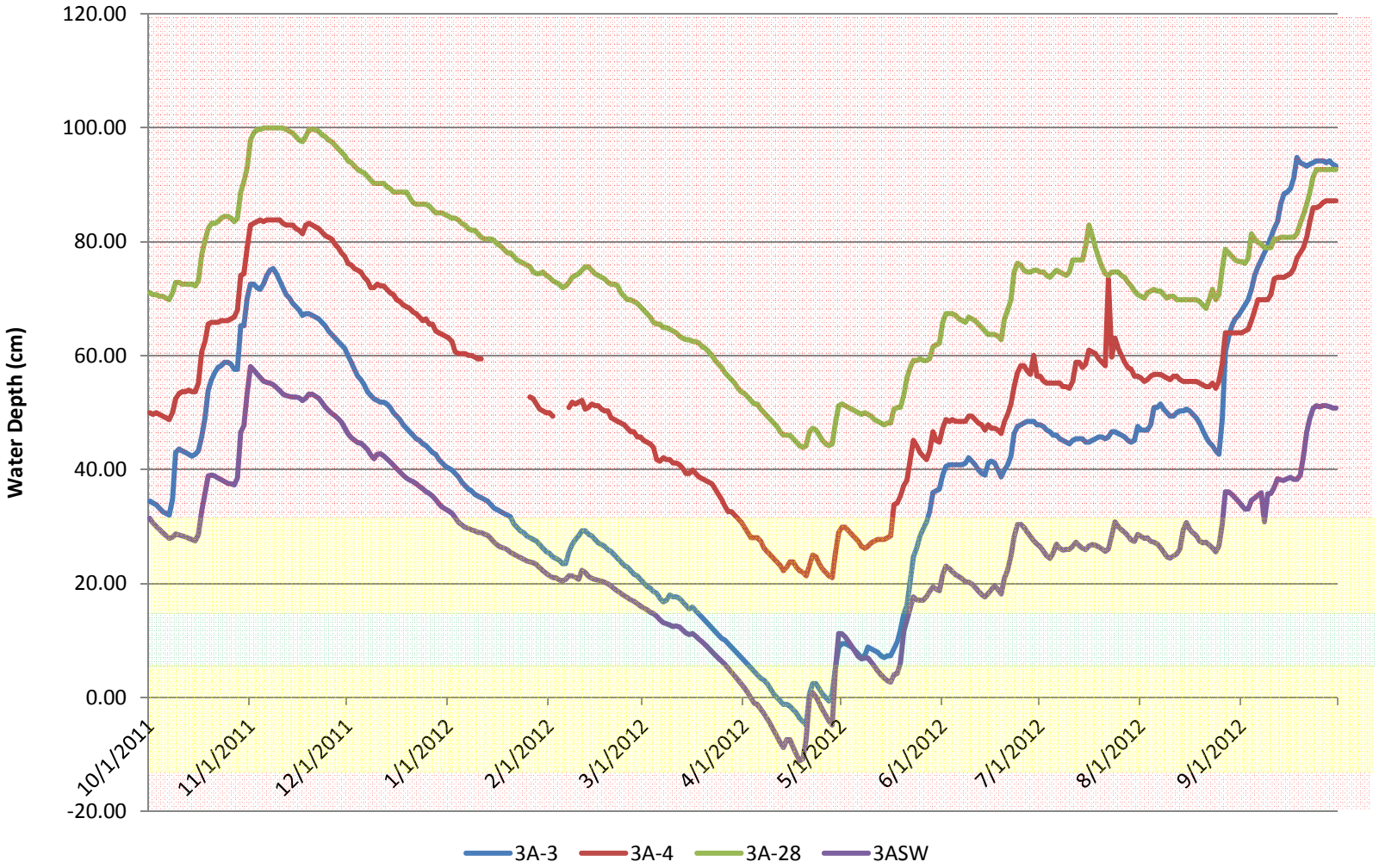

Figure 21. White ibis foraging depths within WCA-3A as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and Gauge 3ASW.

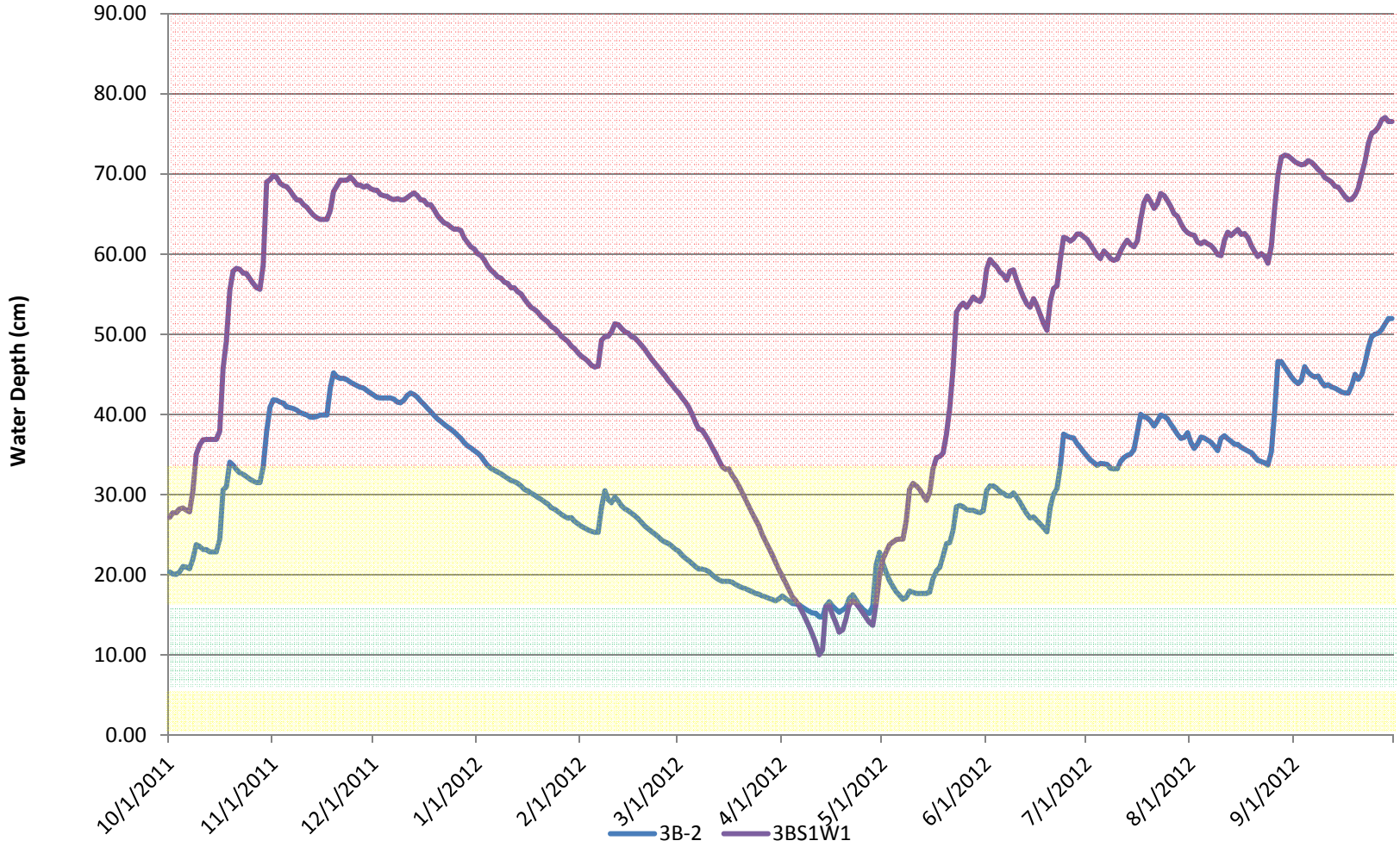

Figure 22. White ibis foraging depths within WCA-3B as measured at Gauge 3B-2 and Gauge 3BS1W1.

As illustrated in Figure 22, suitable water depths (optimal/sub-optimal) for white ibis foraging within WCA-3A were available throughout much of WY12 nesting season at Gauge 3A-3 and 3ASW. Sub-optimal foraging depths were experienced between April and June at Gauge 3A-4 and were not attained at Gauge 3A-28 in southern WCA-3A during WY12. In WCA-3B, water depths at Gauge 3B-2 were appropriate (sub-optimal) for white ibis foraging throughout a portion of WY12, with the exception of periods during November and December 2011 and mid June through September 2012 (Figure 20). Depths experienced at Gauge 3BS1W1 were also deeper than those required to support foraging white ibis. As shown in Table 18, several reversals occurred due to rainfall events during the later portion of the dry season. For further information regarding water management activities during the white ibis breeding season, please refer to Section III.C.1 (Rapid Recession Rates and Amplitude). The 2012 South Florida Water Management District Annual Wading Bird Report is expected to be available in December 2012 (www.sfwmd.gov).

D. Tree Islands

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Sites 63, 64, 65])

Performance Measure

I. *WCA-3A: For tree islands, strive to keep high water peaks < 10.8 feet, NGVD, not to exceed 10.8 ft for more than 60 days per year, and reach water levels < 10.3 feet, NGVD by December 31.*

Table 27. WCA-3A peak high water levels, number of days WCA-3AVG was greater than 10.8 feet, NGVD and the WCA-3AVG stage (feet. NGVD) on December 31.

Year	WCA-3AVG High Water Peak Stage (feet, NGVD)	Number of Days WCA-3AVG > 10.8 feet, NGVD	WCA-3A Stage (feet, NGVD) on December 31
2010	10.68	0	9.57
2011	11.33	59	10.40

As indicated in Table 27, water levels as measured at WCA-3AVG exceeded 10.8 feet, NGVD for a total of 59 days during WY12. Between October 29, 2011 and December 3, 2011 water levels as measured at the WCA-3AVG exceeded 10.8 feet NGVD for a period of 36 days and again exceeded 10.8 feet NGVD for a period of 23 days; therefore, PM-I was not achieved in WY12.

VII. References

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ERTP Annual Assessment Appendix A: November 17, 2010 ERTP Biological Opinion Incidental Take Statement, Terms and Conditions and Reinitiation Notice

ERTP Annual Assessment Appendix B:
WCA-3 Periodic Scientists Calls Documentation Reports

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

DEC 17 2013

Mr. Bob Progulske, Assistant Field Supervisor
South Florida Ecological Services Field Office
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960-3559

Dear Mr. Progulske,

In accordance with the November 17, 2010 U.S. Fish and Wildlife Service Biological Opinion on the Everglades Restoration Transition Plan (ERTP), the U.S. Army Corps of Engineers has prepared an annual assessment for Water Year 2013 covering the time period between October 1, 2012 and September 30, 2013. The assessment documents water management operations and includes an analysis of Incidental Take and ERTP Performance Measures. If you have any questions or need additional information, please contact Dr. Gina Ralph at 904-232-2336.

Sincerely,

Eric P. Summa
Chief, Environmental Branch

Enclosure

ANNUAL ASSESSMENT REPORT: WATER YEAR 2013 (OCTOBER 1, 2012-SEPTEMBER 30, 2013)

Everglades Restoration Transition Plan

Prepared by
Department of the Army
Jacksonville District Corps of Engineers

17 DECEMBER 2013

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. Introduction

In accordance with the Terms and Conditions contained within the November 17, 2010 U.S. Fish and Wildlife Service (FWS) Biological Opinion (BO) on the Everglades Restoration Transition Plan (ERTP), the U.S. Army Corps of Engineers (USACE) is required to provide an annual assessment of ERTP operations. This annual assessment includes a summary of Periodic Scientists Calls, analysis of incidental take, analysis of ERTP performance measures and ecological targets and species monitoring. The Incidental Take Statements (ITS), Terms and Conditions and Reinitiation Notice are defined in the 2010 ERTP BO. Periodic Scientists Calls documentation reports are on file at USACE and are available upon request. Species monitoring reports will be provided to FWS upon USACE receipt from Principal Investigators in accordance with monitoring contract schedule. All data used within this analysis was obtained from either the DBHYDRO database (http://my.sfwmd.gov/dbhydroplsql/show_dbkey_info.main_menu) maintained by the South Florida Water Management District or the Everglades Depth Estimation Network (EDEN) (http://sofia.usgs.gov/eden/stationlist.php), maintained by the United States Geological Survey. Please note that all data are considered provisional and subject to change, unless otherwise noted. For additional information concerning Section II of this report, please contact Olice Williams at Olice.E.Williams@usace.army.mil; for additional information concerning the remainder of this document, please contact Dr. Gina Ralph at Gina.P.Ralph@usace.army.mil.

The ERTP Record of Decision was signed October 19, 2012, thereby implementing ERTP operations. Water management operations prior to October 19, 2012 were in accordance with the 2006 Interim Operational Plan for Protection of the Cape Sable Seaside Sparrow (IOP).

II. Periodic Scientists Calls

A. Summary of Input Received by Agency

As part of the Water Conservation Area 3 (WCA-3) Periodic Scientists Call (PSC) process, members of Federal, State and Local Agencies, Tribes and the general public are invited to participate. Table 1 provides a summary of input from Federal, State and Local Agencies as well as the Miccosukee Tribe of Indians of Florida provided for the PSCs within Water Year 2013 (WY13, October 1, 2012 through September 30, 2013).

B. Summary of Actions Taken by USACE

Table 1 provides a summary of water management operations for WY13. Operations include making WCA-3A rainfall plan target flow releases at the S-12 and S-333 structures (i.e. 45% at S-12 structures and 55% at S-333). Operations also include discharges through S-333 as needed for water supply purposes for Miami-Dade County.

C. USACE Decision-Making Rationale (Considerations)

Factors taken into consideration when performing water management operations include, but are not limited to, potential impacts to public health and safety, as well as water supply needs, local basin runoff, current weather conditions, forecasted weather conditions, ecological conditions, flood protection, salinity control, groundwater control, estuary conditions, agricultural irrigation, and recreation. In addition, since the Record of Decision for ERTP was not executed until October 19, 2012, WY13 water management operations prior to October 19, 2012 were defined by 2006 IOP.

D. Summary Hydrologic Results

WCA-3A water management actions taken from October 2012 through November 2012 were to maximize releases from WCA-3A while remaining consistent with 2006 IOP or 2012 ERTP. WCA-3A water management actions taken from December 2012 through April 2013 were to minimize releases from WCA-3A while remaining consistent with 2012 ERTP. WCA-3A water management actions taken from May 2013 through the remainder of WY13 were to maximize releases from WCA-3A while remaining consistent with ERTP.

E. Conclusions

All operational decisions remained consistent with 2006 IOP or 2012 ERTP making releases based on the WCA-3A Rainfall-Based Management Plan target flows while taking into consideration the multiple sources of input including the PSC forum.

Table 1. Water Conservation Area 3 Periodic Scientists Call: Summary of recommendations, decisions and hydrologic effects for WY13 (October 2012 through September 30, 2013).

PSC Date	Summary of Agency Input Received	USACE Decision	USACE Decision Rationale	Summary of Actions Taken	Hydrologic Results
11-Oct-2012	Water management efforts should focus on continued maximized releases from Water Conservation Area 3A (WCA-3A) in an effort to allow the WCA-3A, 3-station average (WCA-3AVG; average of Gauges 3A-3, 3A-4 and 3A-28) to recede to 10.5 ft., NGVD through January 01, 2013. The purpose of the operations are to provide benefits to snail kites, apple snails, wood storks, other wading birds, and tree islands while ensuring levee integrity.	To maximize releases from WCA-3A. Inflow: S-11s = 1673 cubic feet per second ([cfs], daily average) Outflow: S-12s= 3339 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 450 cfs (daily average) S-31= 281 cfs (daily average) S-343A = Fully Opened S-343B = Fully Opened S-344= Fully Opened	To allow the WCA-3AVG to recede to 10.5 ft., NGVD through January 01, 2013 for the purpose of providing benefits to snail kites, apple snails, wood storks, other wading birds, and tree islands while ensuring levee integrity.	Continued operations include maximum practicable discharges from WCA-3A to reduce the water levels. Operations include continued discharges through the S-12s to meet the WCA-3A Rainfall-Based Management Plan target flow. Discharges made from S-343A, S-343B and S-344 per 2006 IOP. Discharges are also being made from S-151 and S-31.	Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. 2006 IOP Column 1 operations The net effect of the discharges and inflows decreased the stage in WCA-3A by 0.01 ft per day.
08-Nov-2012	Water management efforts should focus on continued releases from WCA-3A in an effort to allow the WCA-3AVG to recede to 10.5 ft., NGVD by January 01, 2013. The purpose of the operations is to provide benefits to snail kites, apple snails, wood storks, other wading birds, and tree islands while ensuring levee integrity.	To maximize releases from WCA-3A. Inflow: S-11s = 215 cfs (daily average) S-8= 1866 cfs Outflow: S-12s= 1708 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To allow the WCA-3AVG to recede to 10.5 ft., NGVD by January 01, 2013 for the purpose of providing benefits to snail kites, apple snails, wood storks, other wading birds, and tree islands while ensuring levee integrity.	Continued operations include maximum practicable discharges from WCA-3A to reduce the water levels. Operations include continued discharges through S-12B, C, and D to meet the WCA-3A Rainfall-Based Management Plan target flow. S-343A, S-343B and S-344 were closed per ERTP. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations The net effect of the discharges and inflows increased the stage in WCA-3A by 0.001 ft per day.
13-Dec-2012	Water management efforts should focus on reducing releases from WCA-3A as practicable in an effort to reduce the recession and allow the WCA-3AVG to recede to 10.5 ft., NGVD by January 01, 2013. The purpose of the operations are to provide benefits to snail kites, apple snails, wood storks, other wading birds, and tree islands while ensuring levee integrity.	To minimize releases from WCA-3A. Inflow: S-11s = 204 cfs (daily average) S-8= 820 cfs (daily average) S-150= 106 cfs (daily average) Outflow: S-12s= 1693 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To reduce the recession and allow the WCA-3AVG to recede to 10.5 ft., NGVD by January 01, 2013 for the purpose of providing benefits to snail kites, apple snails, wood storks, other wading birds, and tree islands while ensuring levee integrity.	Operations include minimum practicable discharges from WCA-3A to slow the recession while in accordance with ERTP. Operations include continued discharges through S-12B, C, and D to meet the WCA-3A Rainfall-Based Management Plan target flow. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations The net effect of the discharges and inflows decreased the stage in WCA-3A by 0.002 ft per day.

PSC Date	Summary of Agency Input Received	USACE Decision	USACE Decision Rationale	Summary of Actions Taken	Hydrologic Results
10-Jan-2013	Water management efforts should focus on reducing releases from WCA-3A as practicable in an effort to maintain a recession of the WCA-3AVG of less than 0.06 feet per week. The purpose of the operations is to ensure a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	To minimize releases from WCA-3A Inflow: S-11s = 222 cfs (daily average) G-404 = 200 to 400 cfs Outflow: S-12s= 274 cfs (daily average) S-333= 316 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To maintain a recession of the WCA-3AVG of less than 0.06 feet per week for the purpose of ensuring a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	Operations include minimum practicable discharges from WCA-3A to slow the recession while in accordance with ERTP. Operations include continued discharges through S-12D and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations The net effect of the discharges and inflows on stage in WCA-3A was 0.00 ft per day.
31-Jan-2013	Water management efforts should focus on reducing releases from WCA-3A as practicable in an effort to maintain a recession of the WCA-3AVG of less than 0.06 feet per week. The purpose of the operations is to ensure a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	To minimize releases from WCA-3A Inflow: S-11s = 399 cfs (daily average) G-404 = 200 to 400 cfs Outflow: S-12s= 175 cfs (daily average) S-333= 252 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To maintain a recession of the WCA-3AVG of less than 0.06 feet per week for the purpose of ensuring a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	Operations include minimum practicable discharges from WCA-3A to slow the recession while in accordance with ERTP. Operations include continued discharges through S-12D and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations The net effect of the discharges and inflows increased the stage in WCA-3A by 0.001 ft per day.
28-Feb-2013	Water management efforts should focus on reducing releases from WCA-3A as practicable in an effort to maintain a recession of the WCA-3AVG of less than 0.06 feet per week. The purpose of the operations is to ensure a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	To minimize releases from WCA-3A Inflow: S-11s = 786 cfs (daily average) Outflow: S-12s= 103 cfs (daily average) S-333= 95 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To maintain a recession of the WCA-3AVG of less than 0.06 feet per week for the purpose of ensuring a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	Operations include minimize discharges from WCA-3A to slow the recession while in accordance with ERTP. Operations include continued discharges through S-12D and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations The net effect of the discharges and inflows increased the stage in WCA-3A by 0.002 ft per day .

PSC Date	Summary of Agency Input Received	USACE Decision	USACE Decision Rationale	Summary of Actions Taken	Hydrologic Results
21-Mar-2013	Water management efforts should focus on reducing releases from WCA-3A as practicable in an effort to achieve a recession of the WCA-3AVG of less than 0.06 feet per week. The purpose of the operations is to ensure a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	To minimize releases from WCA-3A Inflow: S-11s = 0 cfs Outflow: S-12s= 0 cfs S-333= 316 cfs (daily average) S-334= 294 cfs (daily average) S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To achieve a recession of the WCA-3AVG of less than 0.06 feet per week for the purpose of ensuring a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	Operations include minimizing discharges from WCA-3A to slow the recession. Operations also include SFWMD discharges through S-333 and S-334 for water supply. The WCA-3A Rainfall-Based Management Plan target flow is 0 cfs.	Water supply releases are being made at S-333 and S-334 by SFWMD. ERTP Column 1 operations The net effect of the discharges and inflows decreased the stage in WCA-3A by 0.002 ft per day.
18-Apr-2013	Water management efforts should focus on reducing releases from WCA-3A as practicable in an effort to achieve a recession of the WCA-3AVG of less than 0.06 feet per week. The purpose of the operations is to ensure a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds.	To minimize releases from WCA-3A Inflow: S-11s =190 cfs (daily average) Outflow: S-12s= 0 cfs S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To achieve a recession of the WCA-3AVG of less than 0.06 feet per week for the purpose of ensuring a sufficient prey base throughout the breeding season for snail kites, wood storks and other wading birds	Operations include minimizing discharges from WCA-3A to slow the recession. The WCA-3A Rainfall-Based Management Plan target flow is 0 cfs	Releases by SFWMD may be made at S-333 and S-334 for water supply. ERTP Column 1 operations The net effect of the discharges and inflows on stage in WCA-3A was 0.00 ft per day.
23-May-2013	Water management efforts should focus on maximizing releases from WCA-3A to the extent practicable in an effort to achieve a recession of the WCA-3AVG of less than 0.06 feet per week to protect endangered and threatened species, enhance wading bird reproduction, and preserve important habitats, support apple snail survival and reproductive efforts. If increasing water levels are unavoidable due to rainfall, it is desired that ascension rates not exceed 0.25 ft/week in order to avoid drowning apple snail egg clusters.	To maximize releases from WCA-3A Inflow: S-11s = 0 cfs S-150 = 390 cfs Outflow: S-12s= 386 cfs (daily average) S-333= 700 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To achieve a recession of the WCA-3AVG of less than 0.06 feet per week to protect endangered and threatened species, enhance wading bird reproduction, and preserve important habitats, support apple snail survival and reproductive efforts. If increasing water levels are unavoidable due to rainfall, avoid ascension rates greater than 0.25 ft/week in order to avoid drowning apple snail egg clusters.	Operations include maximum practicable discharges from WCA-3A to begin a recession. Operations also include discharges through S-12C, S-12D and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations The net effect of the discharges and inflows decreased the stage in WCA-3A by 0.002 ft per day.

PSC Date	Summary of Agency Input Received	USACE Decision	USACE Decision Rationale	Summary of Actions Taken	Hydrologic Results
20-June-2013	Water management efforts should focus on maximizing releases from WCA-3A to the extent practicable in an effort to achieve a recession of the WCA-3AVG of less than 0.05 feet per week to protect endangered and threatened species, enhance wading bird reproduction, and preserve important habitats, support apple snail survival and reproductive efforts. If increasing water levels are unavoidable due to rainfall, it is desired that ascension rates not exceed 0.25 ft/week in order to avoid drowning apple snail egg clusters.	To maximize releases from WCA-3A Inflow: S-11s = 3,183 cfs (daily average) S-8: 320 cfs (daily average) Outflow: S-12s= 327 cfs (daily average) S-333: 1,152 cfs (daily average) S-334 : 704 cfs (daily average) S-151= 645 cfs (daily average) S-31= 454 cfs (daily average) S-343A = Closed S-343B = Closed S-344= Closed	To achieve a recession of the WCA-3AVG of less than 0.05 feet per week to protect endangered and threatened species, enhance wading bird reproduction, and preserve important habitats, support apple snail survival and reproductive efforts. . If increasing water levels are unavoidable due to rainfall, avoid ascension rates greater than 0.25 ft/week in order to avoid drowning apple snail egg clusters.	Operations include maximum practicable discharges from WCA-3A to begin a recession. Operations also include discharges through S-12C, S-12D and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 2 operations The net effect of the discharges and inflows on stage in WCA-3A was 0.00 ft per day.
11-July-2013	Water management efforts should focus on maximizing releases from WCA-3A to the extent practicable in an effort to maintain the WCA-3AVG near 10.5 ft., NGVD by October 1. The purpose of the operations is to moderate the ascension rates to protect endangered and threatened species, and preserve important habitats, support apple snail survival.	To maximize releases from WCA-3A Inflow: S-11s = 2,233 cfs (daily average) S-8: 720 cfs (daily average) Outflow: S-12s= 1139 cfs (daily average) S-333: 104 cfs (daily average) S-334: 102 cfs (daily average) S-151= 670 cfs (daily average) S-31= 442 cfs (daily average) S-343A = Closed S-343B = Closed S-344= Closed	To maintain the WCA-3AVG near 10.5 ft., NGVD by October 1 for the purpose of moderating the ascension rates to protect endangered and threatened species, and preserve important habitats, support apple snail survival.	Operations include maximum practicable discharges from WCA-3A to begin a recession. Operations also include discharges through S-12C, S-12D and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 2 operations The net effect of the discharges and inflows increased the stage in WCA-3A by 0.001 ft per day.
01-Aug-2013	Water management efforts should focus on maximizing releases from WCA-3A to the extent practicable in an effort to manage the ascension and begin and recession of the WCA-3AVG to 10.5 ft., NGVD by October 1. The purpose of the operations is to protect endangered and threatened species, and preserve important habitats.	To maximize releases from WCA-3A Inflow: S-11s = 4,148 cfs (daily average) S-8: 636 cfs (daily average) Outflow: S-12s= 2,089 cfs (daily average) S-333: 408 cfs (daily average) S-334: 402 cfs (daily average) S-151= 751 cfs (daily average) S-31= 382 cfs (daily average) S-343A = Opened Fully S-343B = Opened Fully S-344= Opened Fully	To manage the ascension and begin and recession of the WCA-3AVG to 10.5 ft., NGVD by October 1 for the purpose of protecting endangered and threatened species, and preserve important habitats.	Operations include maximum practicable discharges from WCA-3A to begin a recession. Operations also include discharges through S-12A, S-12B, S-12C, S-12D and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 2 operations The net effect of the discharges and inflows decreased the stage in WCA-3A by 0.004 ft per day.

PSC Date	Summary of Agency Input Received	USACE Decision	USACE Decision Rationale	Summary of Actions Taken	Hydrologic Results
05-Sep-2013	Water management efforts should focus on maximizing releases from WCA-3A to the extent practicable in an effort to increase the recession of the WCA-3AVG toward 10.5 ft., NGVD by October 1. The purpose of the operations is to protect endangered and threatened species, and preserve important habitats.	To maximize releases from WCA-3A Inflow: S-11s = 802 cfs (daily average) S-8: 720 cfs (daily average) Outflow: S-12s= 1,583 cfs (daily average) S-333: 83 cfs (daily average) S-334: 78 cfs (daily average) S-151= 570 cfs (daily average) S-31= 427 cfs (daily average) S-343A = Opened Fully S-343B = Opened Fully S-344= Opened Fully	To increase the recession of the WCA-3AVG toward 10.5 ft., NGVD by October 1. The purpose of the operations is to protect endangered and threatened species, and preserve important habitats.	Operations include maximum practicable discharges from WCA-3A to begin a recession. Operations also include discharges through S-12A, S-12B, S-12C and S-333 to meet the WCA-3A Rainfall-Based Management Plan target flow. S-12D was closed temporarily to open a gap near S-346. Operations also include inflows from STA-3/4.	Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 2 operations The net effect of the discharges and inflows decreased the stage in WCA-3A by 0.007 ft per day.

III. Incidental Take Statement Analysis: Everglade Snail Kite

A. Prolonged High Stages

1. ***Reinitiation Trigger****: If water levels rise above 10.5 feet, NGVD at Gauge 3AS3W1 for 60 consecutive days in 2 consecutive years as a result of ERTP operations (or the period in which IOP remains in place), incidental take will be exceeded.*

Note: If water levels rise above 10.5 feet, NGVD at the 3AS3W1 gauge for 60 consecutive days in any single year, USACE will conduct a retrospective review to determine potential cause(s) of the high water and share this information with FWS.

Table 2. Total annual precipitation and the number of days Gauge 3AS3W1 was greater than 10.5 feet, NGVD for Water Year (WY) 2011 through WY 2013 (October 1– September 30).

Water Year	Total Precipitation (inches; EDEN-NEXRAD)	Gauge 3AS3W1 High Water Peak Stage (feet, NGVD)	Number of Days Gauge 3AS3W1 > 10.5 feet, NGVD
2011	42.33	10.19	0
2012	59.55	10.83	41
2013	55.75	11.02	70

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

4. **Conclusion:** *As indicated in Table 2 and Figure 1, during WY13 water levels at Gauge 3AS3W1 rose above 10.5 feet, NGVD for a period of 70 consecutive days between 23 July 2013 and 30 September 2013. As such there is a requirement for USACE to conduct a retrospective review of water management actions related to this ITS trigger. As reported at Gauge 3AS3W1, higher than average precipitation occurred during the months of May through July 2013. All structure discharges were maximized to the extent practicable to alleviate high water conditions within WCA-3A. In response to the higher than average precipitation, USACE (or its local sponsor, South Florida Water Management District) completed several actions to address high water conditions in WCA-3A during 2013. The response included gaping of the Old Tamiami Trail adjacent to the S-346 structure and completion of surveying required for vegetation management south of the S-12B structure. In addition, USACE released an Environmental Assessment for a planned deviation for the G-3273 stage constraint. This action was not finalized due to State of Florida concerns over water quality and flood protection within the South Dade Conveyance System. In addition, lack of acquisition of the necessary easements to raise water levels within Everglades National Park also prevented a Finding of No Significant Impact. Other USACE proposals to address high water concerns within WCA-3A included L-29 Borrow Canal Stage Constraint, WCA-2A Regulation Schedule, WCA-3B Stage Constraint, S-197 Proactive Opening and consultation with FWS regarding Cape Sable seaside sparrow closure periods. Each of the options was rejected based upon individual constraints.*

USACE has concluded that water levels above 10.5 feet NGVD were the result of natural rainfall conditions and not a result of operations prescribed by 2012 ERTP. In addition, USACE utilized all available means of removing water from WCA-3A and thus has concluded that reinitiation is not required at this time.

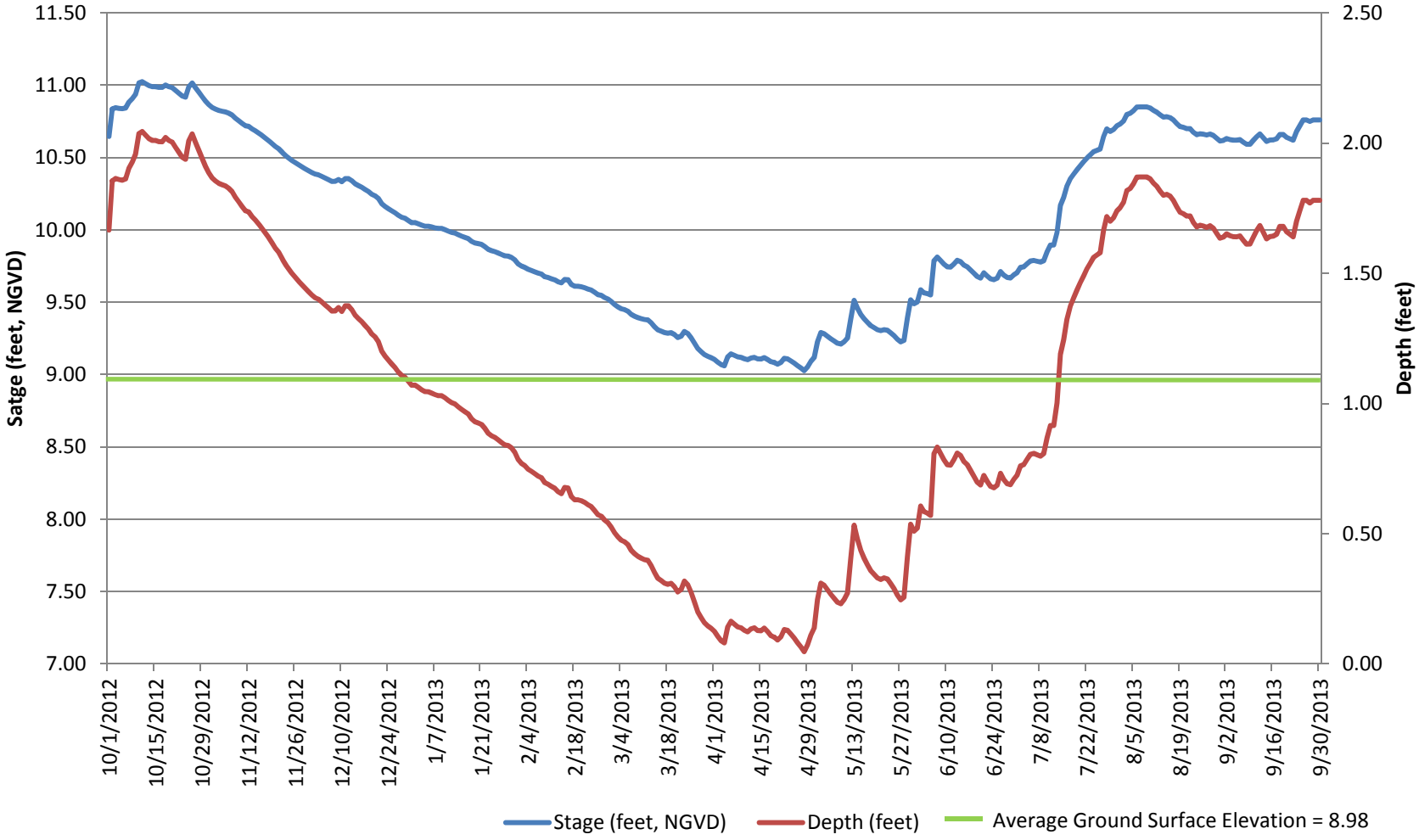

Figure 1. Gauge 3AS3W1 Stage (feet, NGVD) from October 1, 2012 through September 30, 2013.

B. High Water in Dry Season

1. **Reinitiation Trigger:** *Incidental Take will be exceeded when maximum water levels exceed 9.2 feet, NGVD at Gauge 3AS3W1 on or after April 15 in two consecutive years as a result of ERTP operations, or during the period when IOP remains in place.*

Note: If water levels exceed this threshold in any single year, USACE will conduct a retrospective review to determine the potential causes(s) of high water and will coordinate with FWS to apply adaptive management in an attempt to avoid high water conditions during future dry seasons.

Table 3. Number of days Gauge 3AS3W1 was greater than 9.2 feet, NGVD between April 15 and May 31, 2013.

Water Year	Total Precipitation (inches; EDEN-NEXRAD; January 1-May 31)	Gauge 3AS3W1 High Water Peak Stage (feet, NGVD)	Number of Days Gauge 3AS3W1 > 9.2 feet, NGVD (April 15-May 31)
2011	8.88	8.49	0
2012	19.36	9.71	18
2013	14.42	9.52	30

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

4. **Conclusion**: *As indicated in Table 3 and Figure 2, during WY13 water levels at Gauge 3AS3W1 rose above 9.2 feet, NGVD during the period between April 15 and May 31 for a period of 30 days. As such there is a requirement for USACE to conduct a retrospective review of water management actions related to this ITS trigger.*

As required by 2012 ERTP, S-12A, S-12B, S-343A, S-343B and S-344 were closed through July 14, 2013 for protection of Cape Sable seaside sparrow (CSSS); therefore, these structures were unavailable for water releases from WCA-3A. USACE has concluded that operations of the remaining outlet structures were consistent with the Rainfall Plan and in accordance with 2012 ERTP, therefore, USACE has concluded that high water conditions between April 15 and May 31, 2013 were the result of rainfall and not USACE water management operations. Under ERTP, water managers have the additional benefit of the use of S-12C and therefore have a greater potential to meet WCA-3A depth requirements as compared with the 2006 IOP. In addition, WCA-2A water levels remained in Zone A for the duration of the dry season and the 2013 wet season, allowing for the ability to make maximum releases to WCA-3A. During the time period from April 15 to May 31, while stages were between 0.5 and 1.0 feet above the bottom of Zone A, releases were minimized as much as possible in order to limit the potential adverse effects of additional water being added into WCA-3A.

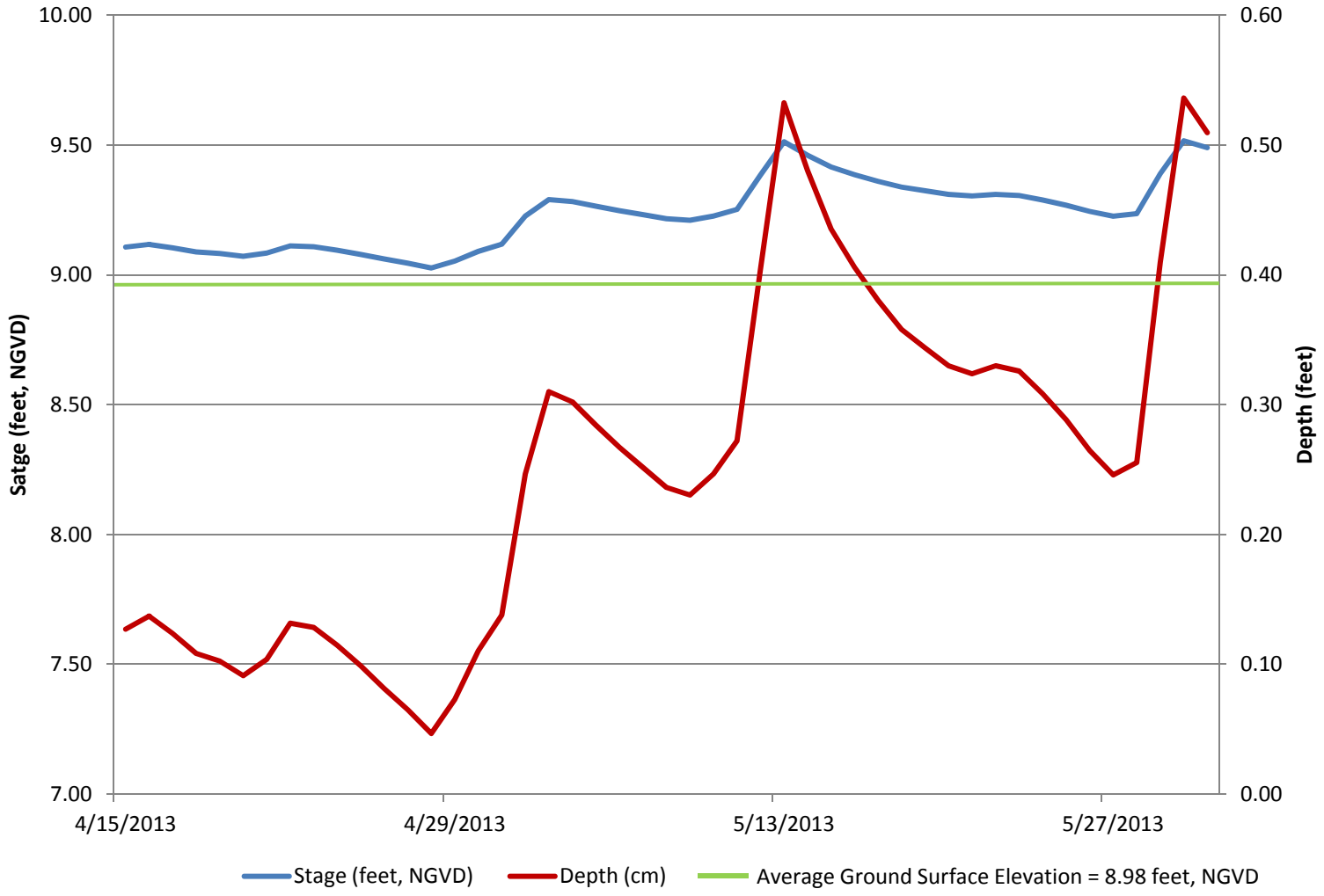

Figure 2. Gauge 3AS3W1 Stage (feet, NGVD) from April 15 through May 31, 2013.

C. Rapid Recession Rates and Amplitude

1. **Reinitiation Trigger:** *Incidental Take will be exceeded if stages in WCA-3A, as measured by the gauge(s) closest to active kite nesting (assessed by FWS as described within the ERTP BO), recede by (1) more than 1.7 feet from January 1 through May 31 or the onset of the wet season, whichever is sooner, or (2) more than 0.34 feet within any 30-day period, in 2 consecutive years as a result of ERTP operations, or the period in which IOP remains in place.*

Note: If either of these amplitudes is exceeded in any single year, USACE will conduct a retrospective review to determine the potential cause(s) of the rapid recession and how future operations can avoid exceeding these thresholds.

Table 4. Dry Season Amplitude: WCA-3A January 1 to May 31 stage difference as measured at the specified gauges*.

Water Year	WCA-3A Stage Difference (feet; January 1 to May 31)			
	3AS3W1	W2	3A-28	3A-4
2011	1.58	1.35	1.81	1.98
2012	0.65	0.99	0.74	0.59
2013	0.56	0.76	0.77	0.78

* Note: FWS has determined that all gauges listed are relevant to snail kite nesting during WY11. FWS has determined that Gauge W2 is relevant to snail kite nesting during WY12. FWS has determined that Gauges 3AS3W1, W-2 and 3A-4 are relevant to snail kite nesting during WY13.

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

Table 5. Dry Season Amplitude: WCA-3A January 1 to May 31, 2013, 30-day rolling stage difference as measured at the specified gauges.

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
1/1/2013	10.05		9.95		9.97		10.46	
1/2/2013	10.04		9.94		9.96		10.45	
1/3/2013	10.03		9.94		9.95		10.44	
1/4/2013	10.03		9.94		9.96		10.43	
1/5/2013	10.03		9.94		9.97		10.42	
1/6/2013	10.02		9.95		9.97		10.41	
1/7/2013	10.01		9.95		9.97		10.40	
1/8/2013	10.01		9.95		9.97		10.39	
1/9/2013	10.01		9.95		9.96		10.39	
1/10/2013	10.00		9.95		9.95		10.38	
1/11/2013	9.99		9.94		9.94		10.37	
1/12/2013	9.98		9.93		9.93		10.36	
1/13/2013	9.98		9.92		9.92		10.34	
1/14/2013	9.97		9.92		9.91		10.33	
1/15/2013	9.96		9.91		9.90		10.32	
1/16/2013	9.95		9.90		9.90		10.31	
1/17/2013	9.94		9.89		9.89		10.30	
1/18/2013	9.92		9.87		9.88		10.28	
1/19/2013	9.91		9.87		9.88		10.27	
1/20/2013	9.91		9.86		9.87		10.27	
1/21/2013	9.90		9.86		9.87		10.26	
1/22/2013	9.88		9.84		9.85		10.24	
1/23/2013	9.87		9.84		9.85		10.21	
1/24/2013	9.86		9.83		9.84		10.20	
1/25/2013	9.85		9.82		9.82		10.18	
1/26/2013	9.84		9.81		9.81		10.18	
1/27/2013	9.83		9.80		9.81		10.17	
1/28/2013	9.82		9.79		9.79		10.16	
1/29/2013	9.82		9.78		9.78		10.15	
1/30/2013	9.81	0.24	9.77	0.18	9.76	0.21	10.14	0.32
1/31/2013	9.79	0.25	9.75	0.19	9.75	0.21	10.13	0.32
2/1/2013	9.77	0.27	9.74	0.19	9.74	0.22	10.10	0.34
2/2/2013	9.75	0.28	9.73	0.20	9.73	0.23	10.08	0.35
2/3/2013	9.74	0.28	9.72	0.23	9.72	0.25	10.07	0.35
2/4/2013	9.73	0.29	9.70	0.25	9.71	0.26	10.05	0.36
2/5/2013	9.72	0.29	9.69	0.26	9.69	0.28	10.04	0.36
2/6/2013	9.71	0.30	9.68	0.27	9.68	0.28	10.03	0.36
2/7/2013	9.70	0.31	9.67	0.28	9.67	0.29	10.03	0.36
2/8/2013	9.70	0.31	9.66	0.29	9.66	0.29	10.02	0.36
2/9/2013	9.68	0.32	9.64	0.29	9.65	0.29	10.01	0.36
2/10/2013	9.67	0.31	9.64	0.29	9.64	0.30	10.00	0.36
2/11/2013	9.66	0.32	9.63	0.29	9.62	0.30	9.99	0.35
2/12/2013	9.65	0.31	9.62	0.30	9.61	0.30	9.98	0.35
2/13/2013	9.64	0.32	9.60	0.31	9.60	0.31	9.97	0.35
2/14/2013	9.63	0.32	9.59	0.31	9.58	0.31	9.95	0.36
2/15/2013	9.66	0.28	9.62	0.27	9.62	0.27	9.96	0.34
2/16/2013	9.66	0.27	9.63	0.24	9.64	0.25	9.96	0.32
2/17/2013	9.62	0.29	9.61	0.26	9.62	0.25	9.94	0.33
2/18/2013	9.61	0.30	9.61	0.26	9.61	0.26	9.92	0.34
2/19/2013	9.61	0.29	9.60	0.26	9.59	0.28	9.92	0.34
2/20/2013	9.61	0.28	9.58	0.26	9.58	0.28	9.91	0.32
2/21/2013	9.60	0.27	9.57	0.27	9.57	0.28	9.90	0.31
2/22/2013	9.59	0.27	9.56	0.27	9.56	0.28	9.90	0.30
2/23/2013	9.58	0.27	9.55	0.27	9.54	0.29	9.90	0.28
2/24/2013	9.57	0.27	9.53	0.28	9.52	0.29	9.89	0.29
2/25/2013	9.55	0.28	9.52	0.28	9.51	0.30	9.88	0.29
2/26/2013	9.55	0.27	9.50	0.30	9.49	0.30	9.87	0.29
2/27/2013	9.53	0.29	9.49	0.30	9.48	0.30	9.85	0.30
2/28/2013	9.52	0.29	9.49	0.28	9.48	0.28	9.84	0.30
3/1/2013	9.51	0.29	9.48	0.27	9.48	0.27	9.83	0.30
3/2/2013	9.48	0.28	9.47	0.27	9.47	0.27	9.80	0.31
3/3/2013	9.47	0.28	9.46	0.28	9.46	0.27	9.77	0.31
3/4/2013	9.45	0.29	9.44	0.27	9.45	0.27	9.76	0.31
3/5/2013	9.45	0.28	9.44	0.27	9.44	0.27	9.75	0.30
3/6/2013	9.44	0.28	9.42	0.27	9.42	0.27	9.74	0.30
3/7/2013	9.42	0.29	9.40	0.28	9.41	0.28	9.72	0.31

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
3/8/2013	9.40	0.30	9.39	0.29	9.39	0.28	9.72	0.31
3/9/2013	9.39	0.30	9.38	0.28	9.38	0.28	9.70	0.32
3/10/2013	9.39	0.29	9.37	0.27	9.37	0.28	9.68	0.32
3/11/2013	9.38	0.29	9.36	0.28	9.35	0.28	9.67	0.32
3/12/2013	9.38	0.28	9.35	0.29	9.34	0.29	9.67	0.32
3/13/2013	9.36	0.30	9.32	0.30	9.32	0.30	9.65	0.33
3/14/2013	9.33	0.31	9.31	0.29	9.30	0.30	9.63	0.34
3/15/2013	9.31	0.32	9.30	0.29	9.29	0.30	9.61	0.34
3/16/2013	9.30	0.36	9.28	0.34	9.27	0.35	9.60	0.36
3/17/2013	9.29	0.37	9.26	0.37	9.25	0.39	9.59	0.37
3/18/2013	9.29	0.34	9.25	0.36	9.23	0.39	9.58	0.36
3/19/2013	9.29	0.32	9.26	0.35	9.23	0.37	9.57	0.35
3/20/2013	9.28	0.33	9.24	0.36	9.22	0.37	9.57	0.35
3/21/2013	9.26	0.35	9.22	0.37	9.21	0.37	9.54	0.37
3/22/2013	9.27	0.33	9.21	0.36	9.21	0.36	9.53	0.37
3/23/2013	9.30	0.29	9.22	0.35	9.24	0.32	9.53	0.37
3/24/2013	9.28	0.30	9.20	0.35	9.21	0.33	9.53	0.37
3/25/2013	9.26	0.31	9.18	0.35	9.18	0.34	9.51	0.38
3/26/2013	9.22	0.33	9.15	0.36	9.15	0.36	9.47	0.40
3/27/2013	9.18	0.37	9.13	0.37	9.12	0.37	9.45	0.42
3/28/2013	9.16	0.37	9.11	0.37	9.10	0.38	9.43	0.42
3/29/2013	9.14	0.38	9.10	0.39	9.08	0.40	9.41	0.44
3/30/2013	9.13	0.38	9.08	0.40	9.07	0.41	9.40	0.43
3/31/2013	9.12	0.37	9.07	0.40	9.05	0.42	9.38	0.41
4/1/2013	9.10	0.36	9.05	0.41	9.02	0.44	9.31	0.46
4/2/2013	9.09	0.37	9.03	0.42	9.01	0.44	9.29	0.46
4/3/2013	9.07	0.38	9.01	0.43	8.98	0.46	9.28	0.47
4/4/2013	9.06	0.38	8.99	0.43	8.97	0.46	9.28	0.46
4/5/2013	9.12	0.29	9.07	0.32	9.07	0.34	9.37	0.36
4/6/2013	9.14	0.26	9.10	0.29	9.09	0.30	9.39	0.32
4/7/2013	9.13	0.26	9.09	0.29	9.08	0.30	9.38	0.33
4/8/2013	9.12	0.26	9.08	0.30	9.07	0.30	9.37	0.32
4/9/2013	9.12	0.26	9.06	0.29	9.06	0.30	9.35	0.33
4/10/2013	9.11	0.27	9.05	0.30	9.04	0.30	9.34	0.33
4/11/2013	9.10	0.26	9.04	0.28	9.02	0.30	9.33	0.32
4/12/2013	9.11	0.22	9.04	0.26	9.03	0.27	9.32	0.31
4/13/2013	9.12	0.19	9.04	0.26	9.02	0.27	9.33	0.29
4/14/2013	9.11	0.19	9.03	0.25	9.01	0.26	9.35	0.25
4/15/2013	9.11	0.18	9.05	0.22	8.99	0.26	9.33	0.26
4/16/2013	9.12	0.17	9.09	0.17	9.01	0.22	9.32	0.25
4/17/2013	9.10	0.19	9.07	0.19	9.02	0.22	9.31	0.26
4/18/2013	9.09	0.19	9.05	0.19	9.01	0.22	9.29	0.28
4/19/2013	9.08	0.17	9.03	0.18	8.99	0.22	9.28	0.27
4/20/2013	9.07	0.19	9.02	0.19	8.98	0.24	9.28	0.25
4/21/2013	9.08	0.21	9.02	0.20	8.97	0.27	9.34	0.19
4/22/2013	9.11	0.17	9.04	0.16	8.99	0.22	9.35	0.17
4/23/2013	9.11	0.15	9.07	0.11	9.02	0.16	9.40	0.11
4/24/2013	9.09	0.12	9.06	0.09	9.01	0.14	9.39	0.08
4/25/2013	9.08	0.10	9.00	0.12	9.00	0.12	9.38	0.07
4/26/2013	9.06	0.10	8.98	0.13	8.98	0.12	9.36	0.07
4/27/2013	9.05	0.09	8.96	0.14	8.96	0.12	9.34	0.07
4/28/2013	9.03	0.10	8.94	0.14	8.95	0.12	9.33	0.07
4/29/2013	9.05	0.06	8.96	0.11	8.96	0.09	9.32	0.07
4/30/2013	9.09	0.01	8.99	0.06	8.99	0.04	9.35	-0.04
5/1/2013	9.12	-0.03	8.99	0.04	9.02	-0.02	9.46	-0.17
5/2/2013	9.23	-0.16	9.05	-0.05	9.11	-0.13	9.65	-0.37
5/3/2013	9.29	-0.23	9.11	-0.11	9.14	-0.18	9.69	-0.41
5/4/2013	9.28	-0.16	9.10	-0.02	9.13	-0.06	9.74	-0.38
5/5/2013	9.26	-0.12	9.08	0.02	9.12	-0.02	9.73	-0.33
5/6/2013	9.25	-0.11	9.06	0.03	9.10	-0.02	9.71	-0.33
5/7/2013	9.23	-0.11	9.04	0.04	9.08	-0.01	9.68	-0.32
5/8/2013	9.22	-0.10	9.01	0.05	9.06	0.00	9.67	-0.32
5/9/2013	9.21	-0.10	8.99	0.06	9.04	0.00	9.64	-0.30
5/10/2013	9.23	-0.12	8.97	0.07	9.07	-0.05	9.62	-0.29
5/11/2013	9.25	-0.14	8.98	0.06	9.06	-0.03	9.62	-0.30
5/12/2013	9.38	-0.27	9.03	0.01	9.06	-0.04	9.63	-0.30
5/13/2013	9.51	-0.40	9.18	-0.15	9.11	-0.11	9.62	-0.27
5/14/2013	9.46	-0.35	9.22	-0.17	9.13	-0.13	9.60	-0.27

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
5/15/2013	9.42	-0.30	9.18	-0.09	9.10	-0.09	9.58	-0.26
5/16/2013	9.39	-0.28	9.15	-0.08	9.07	-0.06	9.57	-0.26
5/17/2013	9.36	-0.27	9.11	-0.06	9.05	-0.04	9.55	-0.26
5/18/2013	9.34	-0.26	9.09	-0.05	9.04	-0.05	9.55	-0.27
5/19/2013	9.32	-0.25	9.06	-0.05	9.04	-0.06	9.57	-0.29
5/20/2013	9.31	-0.23	9.04	-0.03	9.05	-0.08	9.60	-0.25
5/21/2013	9.30	-0.19	9.03	0.01	9.07	-0.08	9.63	-0.27
5/22/2013	9.31	-0.20	9.02	0.06	9.07	-0.05	9.61	-0.21
5/23/2013	9.31	-0.21	9.01	0.05	9.08	-0.07	9.59	-0.20
5/24/2013	9.29	-0.21	8.99	0.02	9.06	-0.05	9.58	-0.20
5/25/2013	9.27	-0.21	8.97	0.01	9.02	-0.04	9.57	-0.21
5/26/2013	9.24	-0.20	8.95	0.01	8.99	-0.02	9.55	-0.21
5/27/2013	9.23	-0.20	8.93	0.00	8.96	-0.01	9.52	-0.19
5/28/2013	9.24	-0.18	8.94	0.02	8.97	-0.02	9.54	-0.22
5/29/2013	9.39	-0.30	9.07	-0.08	9.12	-0.13	9.65	-0.30
5/30/2013	9.52	-0.40	9.18	-0.19	9.24	-0.22	9.70	-0.24
5/31/2013	9.49	-0.26	9.19	-0.14	9.21	-0.09	9.69	-0.04

* Note: Numbers highlighted in yellow indicate recession rates that are greater than preferred (i.e. $\geq$ 0.34 feet) within a 30-day period. Negative numbers represent rising water.

4. Conclusion: *As indicated in Table 4 of the WY13 ERTP Annual Assessment, the dry season amplitude (stage difference between January 1 and May 31, 2013 was not exceeded. However, the monthly amplitude was exceeded at the gauges listed from February 2 through February 14, 2013 and from March 16 through April 5, 2013. As required under the ERTP BO, USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession during this period and how future operations can avoid exceeding these thresholds. The review considered water management operations including releases through the WCA-3A outlet structures, evapotranspiration rates and WCA-3A inflows (e.g. rainfall). A spreadsheet analysis was employed to calculate the effect of S-333 water supply releases on WCA-3A stage. Based upon the results of this analysis, the effect of S-333 releases on WCA-3A stage during WY13 equates to an approximate total of 0.72 inches (0.06 feet). Figure 3 of the WY13 ERTP Annual Assessment illustrates precipitation amounts along with S-333 and S-12 releases throughout the period between January 1 and May 31, 2013. As a result of this retrospective review, USACE determined that the rapid recession rates experienced throughout this period were not a direct result of water management actions, but rather due to dry season evapotranspiration rates associated with well below average rainfall (-5.13 inches) for the first 3 months of 2013.*

The USACE retrospective review consisted of the same methodology employed for WY11 and WY12. Since the majority of WCA-3A outlet structures (i.e. S-12A & B, S343A/B and S-344) were closed during this period, S-12C & D were opened as needed per the Rainfall Plan, S-333 was opened as needed per the Rainfall Plan as well as to meet Lower East Coast water supply demands (as permitted by WCA-3A Interim Regulation Schedule), and rapid recession rates were attributed to dry season evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future.

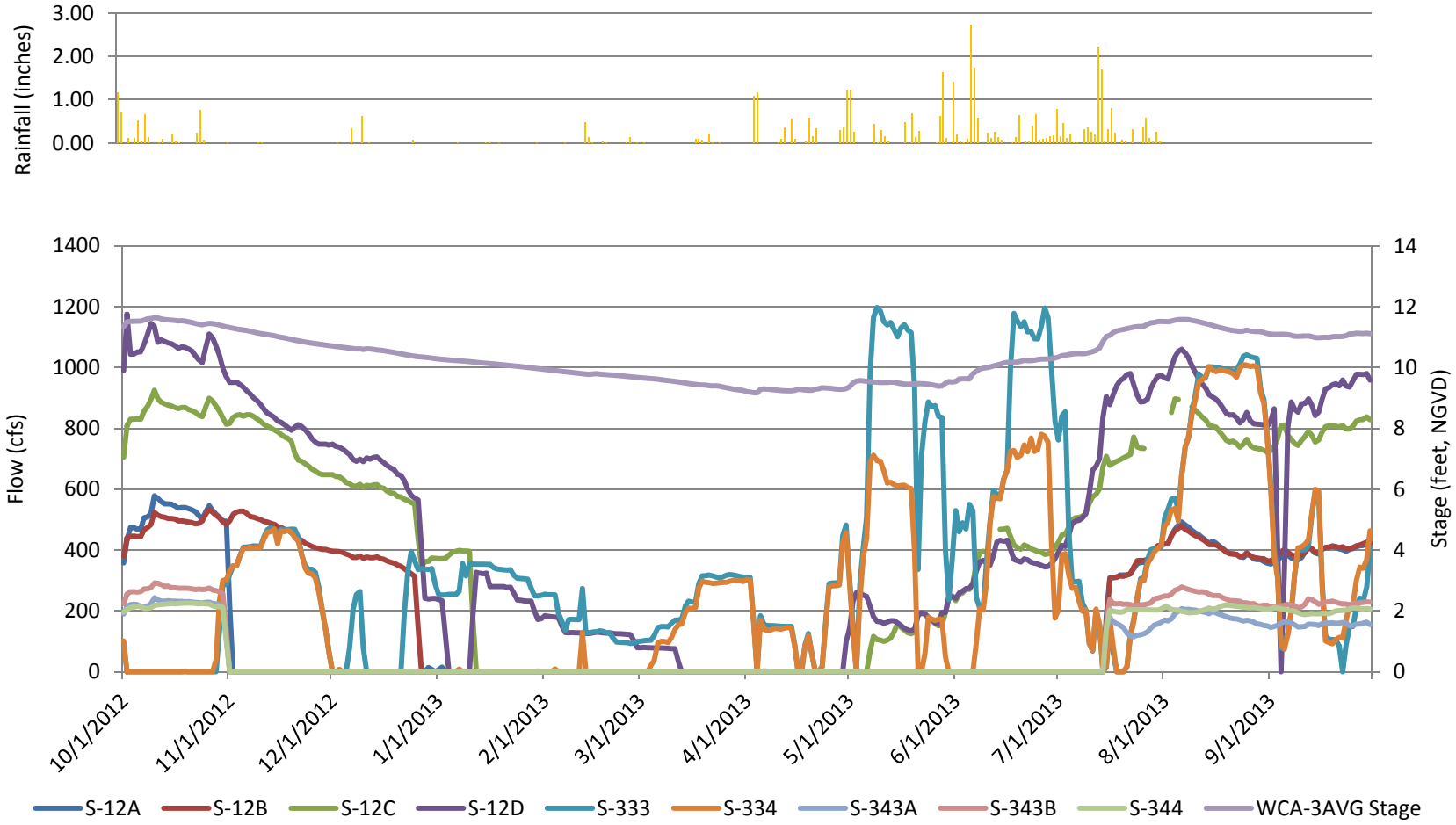

Figure 3. WCA-3AVG Stage (feet, NGVD), WCA-3AVG rainfall (inches) and WCA-3A outflow during WY13.

IV. Incidental Take Statement Analysis: Wood Stork

A. Breeding Season Foraging Depths (Revised March 2, 2012, ERTP BO Amendment)

1. **Reinitiation Trigger:** *Incidental Take will be exceeded if operations from implementing ERTP, or the interim IOP period, results in a water depth greater than 16 inches (41 centimeters) from March 1 through May 31 throughout WCA-3A for two consecutive years as measured by the 3-gauge average (based upon a ground surface elevation of 8.34 feet NGVD) at gauges 3A-3, 3A-4 and 3A-28.*

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

Table 6. Number of days water depth exceeded 16 inches (41 centimeters) at the WCA-3AVG (3-gauge average) between March 1 and May 31, 2013.

Month	2013: Precipitation (inches; EDEN-NEXRAD)	2013: Number of Days Water Depth Exceeded 16 inches (41 centimeters)
March	1.48	0
April	15.44	0
May	22.71	0
Total	39.63	0

Figure 4. WCA-3AVG Stage (feet, NGVD) and water depth (inches) between March 1 and May 31, 2013.

4. ***Conclusion****: As shown in Table 6 and Figure 4, water depths at WCA-3AVG did not exceed 16 inches during March through May 2013. Based upon the results indicated in Table 6 and Figure 4, USACE has concluded that reinitiation of consultation based upon this trigger is not required at this time.*

V. Incidental Take Statement Analysis: Cape Sable Seaside Sparrow

A. Sparrow Population

1. ***Reinitiation Trigger****: If the annual CSSS population estimate falls below 2,915 sparrows [Mean population estimate 2001-2009 = 3,145 ± 230]), reinitiation of consultation must occur.*

Table 7. Cape Sable seaside sparrow bird count and population estimates by year as recorded by the Everglades National Park range-wide survey.

Population/ Year	CSSS-A		CSSS-B		CSSS-C		CSSS-D		CSSS-E		CSSS-F		Total	
	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST
2001	8	128	133	2,128	6	96	2	32	53	848	2	32	204	3,264
2002	6	96	119	1,904	7	112	0	0	36	576	1	16	169	2,704
2003	8	128	148	2,368	6	96	0	0	37	592	2	32	201	3,216
2004	1	16	174	2,784	8	128	0	0	40	640	1	16	224	3,584
2005	5	80	142	2,272	5	80	3	48	36	576	2	32	193	3,088
2006	7	112	130	2,080	10	160	0	0	44	704	2	32	193	3,088
2007	4	64	157	2,512	3	48	0	0	35	560	0	0	199	3,184
2008	7	112	NS	NS	3	48	1	16	23	368	0	0	34	544*
2009	6	96	NS	NS	3	48	2	32	27	432	0	0	38	608*
2010	8	128	119	1904	2	32	4	64	57	912	1	16	191	3,056
2011	11	176	NS	NS	11	176	1	16	37	592	2	32	62	992^
2012	21	336	NS	NS	6	96	14	224	46	736	4	64	91	1,456^
2013	18	288	112	1792	8	128	1	16	45	720	1	16	185	2,960

BC Bird Count
EST Estimate
NS Not Surveyed

* These numbers do not reflect a significant decline in CSSS population. CSSS-B, the largest and most stable subpopulation, was not surveyed in 2008 or 2009. Adding the 2007 CSSS-B population estimate of 2,512 birds to those of the other subpopulations, the estimated total CSSS population size is 3,056 and 3,120 birds for 2008 and 2009, respectively.

^ These numbers do not reflect a significant decline in CSSS population. CSSS-B, the largest and most stable subpopulation, was not surveyed in 2011 or 2012. Adding the 2010 CSSS-B population estimate of 1,904 birds to those of the other subpopulations, the estimated total CSSS population size is 2,896 and 3,360 birds for 2011 and 2012, respectively.

2. ***ITS Exceeded****: No*

3. ***Reinitiation Required:*** *No*

4. ***Conclusion:*** *2013 population estimates reveal a population estimate of approximately 2,960 birds. This population estimate includes survey data from CSSS-B, the largest of the CSSS subpopulations. CSSS-B was not surveyed in either 2011 or 2012; therefore, the total population estimates for 2011 and 2012 are based upon the 2010 CSSS-B survey estimate of 1,904 birds. The total population size appears to be stable when comparing population estimates from 2013 and 2010 when all subpopulations were surveyed (i.e. 2,960 and 3,056 birds respectively). According to the 2013 CSSS survey, 18 singing males were encountered within CSSS-A. During the 2011 and 2012 CSSS nesting season, S-12A-C, S-343A/B and S-334 were closed as per their individual requirements in the 2006 IOP, which was the most current operational plan for this period of time for the WCA-3-Everglades National Park-South Dade Conveyance System. IOP was designed to protect the CSSS to the maximum extent possible through water management operations, which resulted in closure periods for the aforementioned structures. The purpose of closure periods was to provide an improved opportunity for nesting within CSSS-A by maintaining water levels below ground level for a minimum of 60 consecutive days between March 1 and July 15, corresponding to the CSSS breeding season. ERTP Operations were implemented in October 2012. Under ERTP, the S-12C does not have a closure period associated with CSSS protection as it did under IOP, however, the S-12C structure was closed between January 11, 2013 and May 7, 2013 as per the WCA-3A Interim Regulation Schedule.*

During WY13, the S-12A, S-343A/B and S-344 structures were closed November 1, 2012 in accordance with 2012 ERTP. The S-12B structure closed December 26, 2013, in accordance with the WCA-3A Interim Regulation Schedule, 6 days prior to its scheduled closure date of January 1, 2013. Stage data from NP-205 indicate that water was below ground surface level as early as February 4, 2013 and remained below ground surface elevation until April 23, 2013, a period of 78 days. Within the FWS-defined CSSS breeding window of March 1 through July 15, a total of 54 days of continuously dry conditions were experienced at NP-205.

As shown in Table 7, CSSS-A has not recovered under IOP operations, but has remained relatively stable since its implementation in 2002. There are several factors that influence population size including competition, predation and prey availability; recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (i.e. the Allee effect) (Boulton et al. 2009; Virzi et al. 2009). USACE has fully complied with 2012 ERTP CSSS protection measures.

B. Cape Sable Seaside Sparrow Habitat: Eastern Marl Prairies

1. ***Reinitiation Trigger:*** *Operations that raise water levels from groundwater to surface water conditions beyond 0.6 mile of S-332 Detention Areas prior to June 1.*

2. ***ITS Exceeded:*** *No*

3. ***Reinitiation Required:*** *No*

4. ***Conclusions:*** *USACE asked for clarification of the time period for this trigger (November 2010), however, until clarification is provided USACE is assuming that water levels must be below ground surface elevation prior to the FWS-defined CSSS breeding period starting March 1. Thus, USACE is delimiting the period of analysis for this trigger to March 1 through June 1, 2013, until otherwise directed. As shown in Figure 6 and Figure 7, stages at Gauge MRSHOP B1 and MRSHOP C1 respectively, were below ground surface elevation throughout the period between March 1 and June 1, 2011. Surface water conditions were experienced beginning May 29, 2013 at Gauge NTS-10 as illustrated in Figure 8. The USACE has determined that the change from groundwater to surface water conditions at Gauge NTS-10 were a result of 6.6 inches of rainfall as measured at Gauge NTS-10 between May 27 and May 31, 2013 and not the result of water management operations. USACE has concluded that based upon this trigger, reinitiation is not required at this time.*

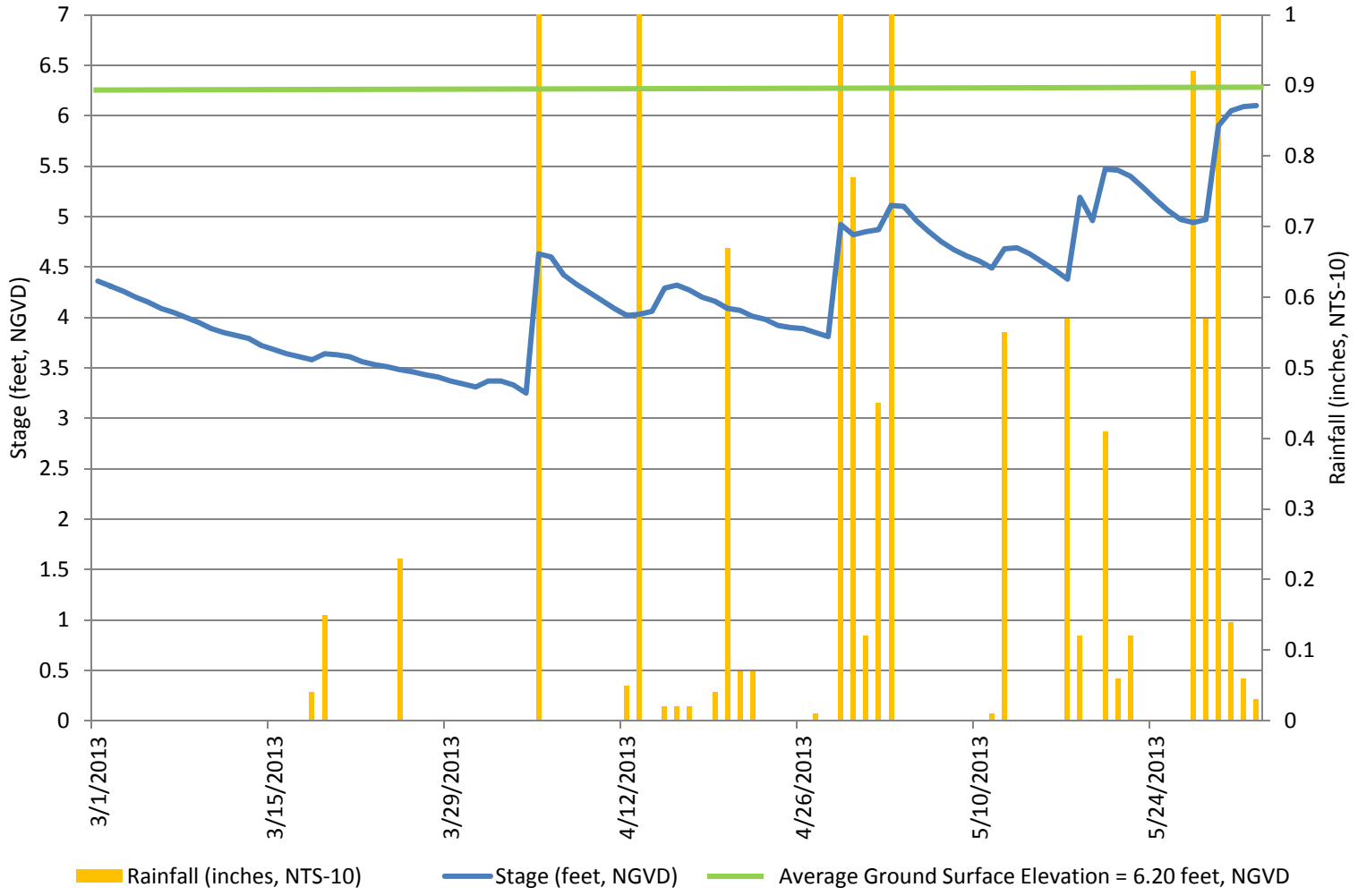

Figure 5. MRSHOP B1 stage (feet, NGVD) and rainfall (inches, Gauge NTS-10) between March 1 and June 1, 2013.

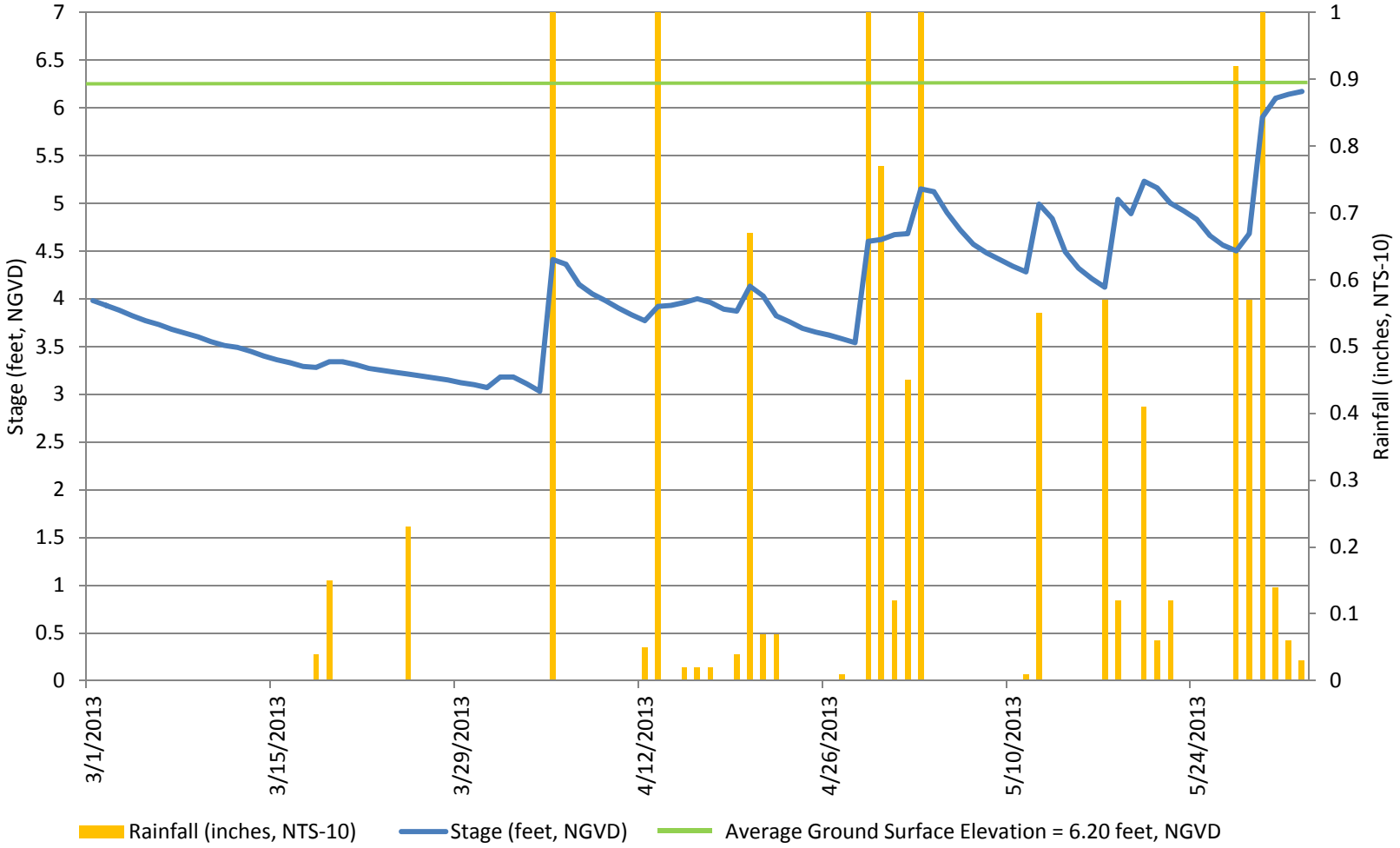

Figure 6. MRSHOP C1 stage (feet, NGVD) and rainfall (inches, Gauge NTS-10) between March 1 and June 1, 2013.

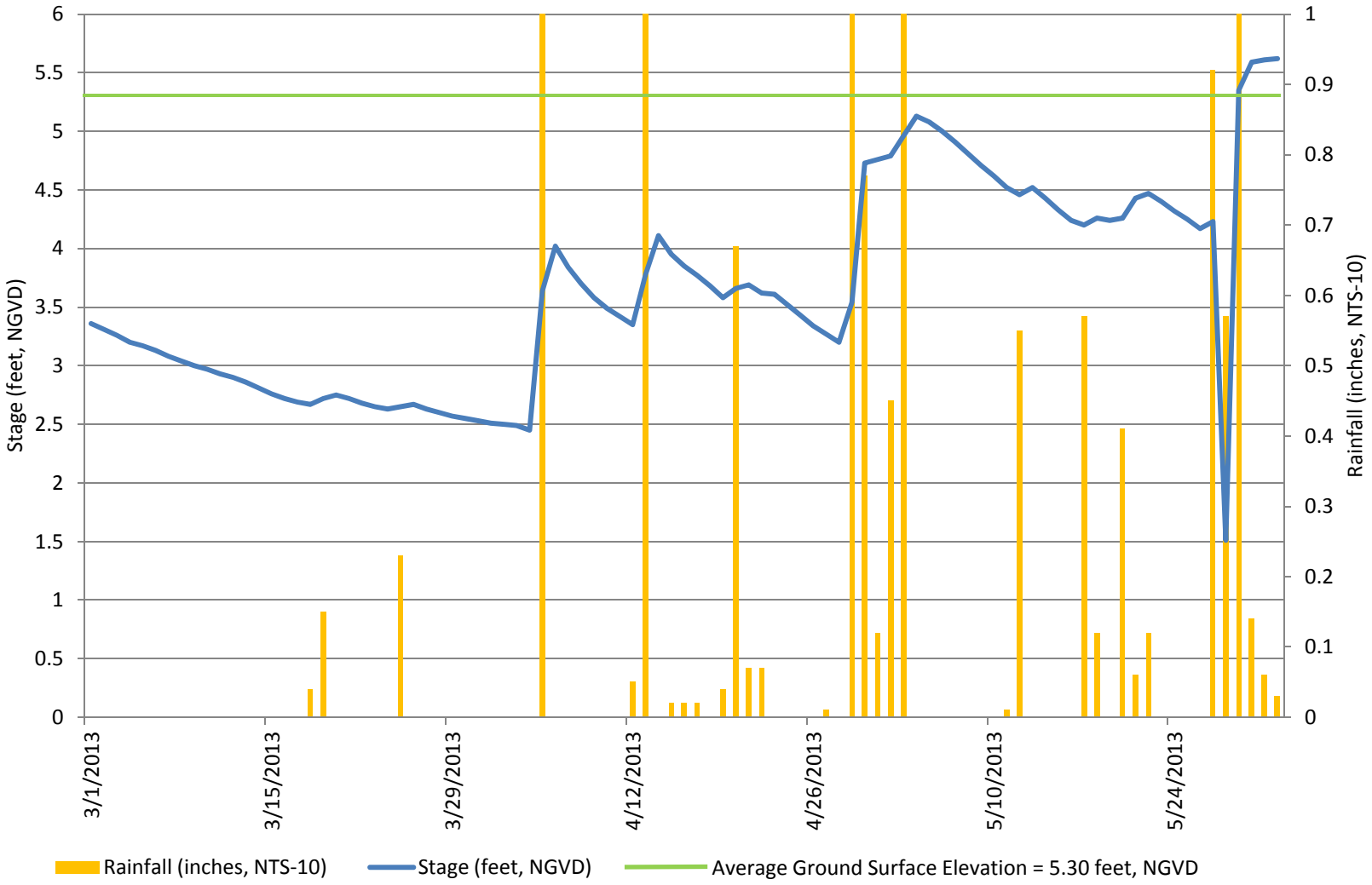

Figure 7. NTS-10 stage (feet, NGVD) and rainfall (inches) between March 1 and June 1, 2013.

C. Cape Sable Seaside Sparrow Habitat: Western Marl Prairies

1. ***Reinitiation Trigger****: Fewer than 60 consecutive days with water levels below ground surface at NP-205 between March 1 and July 15 due to water releases in 2 consecutive years.*

Table 8. Dates that water depths were less than 6.0 feet, NGVD at NP-205 and the number of consecutive dry days at NP-205 during the CSSS nesting window of March 1 and July 15.

Year	Start Date NP-205 < 6.0 feet, NGVD	End Date NP-205 < 6.0 feet, NGVD	Number of Consecutive Days Dry	Number of Consecutive Days Dry (March 1 to July 15)
2011	01/01/11	06/26/11	176	117
2012	01/21/12	05/05/12	106	66
2013	02/04/13	04/23/13	78	54

2. ***ITS Exceeded:*** *No*

3. ***Reinitiation Required:*** *No*

4. ***Conclusion:*** *As shown in Figure 8, S-12A, S-343A/B and S-344 closed November 1 as per 2012 ERTP. ERTP superseded the 2002/2006 Interim Operational Plan for Protection of the Cape Sable Seaside Sparrow (IOP) and was designed to protect the CSSS to the maximum extent possible through water management operations, which resulted in closure periods for the S-12A/B/C, S-343A/B and S-344 structures. The purpose of closure periods was to provide an improved opportunity for nesting within CSSS-A by maintaining water levels below ground level for a minimum of 60 consecutive days between March 1 and July 15, corresponding to the CSSS breeding season.*

During WY13, the S-12B structure closed on December 27, 2012, 6 days prior to the mandated ERTP closure date of January 1, 2013. The structure was closed in accordance with the WCA-3 Interim Regulation Schedule thereby, further limiting flows into western Shark River Slough. Stage data from NP-205 indicate that water was below ground surface level as early as February 4, 2013 and remained below ground surface elevation until April 22, 2012, a period of 77 days. Within the FWS-defined CSSS breeding window of March 1 through July 15, a total of 54 days of continuously dry conditions were experienced at NP-205, therefore falling short of the 60 consecutive dry day requirement. On April 23, 2013 NP-205 stage rose to 6.02 feet NGVD, equating to a water depth of 0.05 cm at NP-205. Water levels receded below ground surface level on April 24, 2013 and remained below ground surface elevation for an additional period of 6 consecutive days. Between the period of April 4 and April 22, 2013, a total of 4.49 inches of rainfall was reported at NP-205 (EDEN, NEXRAD). Water depths of 0.05 cm could potentially affect CSSS-A nesting due to differences in microtopography within CSSS habitat, however, CSSS nests height averages approximately 17 cm above ground surface elevation, therefore some nests within CSSS-A may not have been adversely affected by the transition to surface water conditions experienced April 22, 2013. Since the S-12A/B, S-343A/B and S-344 structures were all closed in accordance with 2012 ERTP and significant rainfall was experienced at NP-205 in April, USACE has concluded that water releases did not contribute to the transition from ground water to surface water at NP-205.

As shown in Table 7, CSSS-A has not recovered under IOP operations, but has remained relatively stable since its implementation in 2002. There are several factors that influence population size including competition, predation and prey availability; recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (i.e. the Allee effect) (Boulton et al. 2009; Virzi et al. 2009). It has also come to the USACE attention, that CSSS potentially may experience sub-lethal effects on reproductive success due to mercury bioaccumulation (Meyer, personal communication 2013). USACE has fully complied with the ERTP CSSS protection measures and has concluded that reinitiation is not necessary at this time.

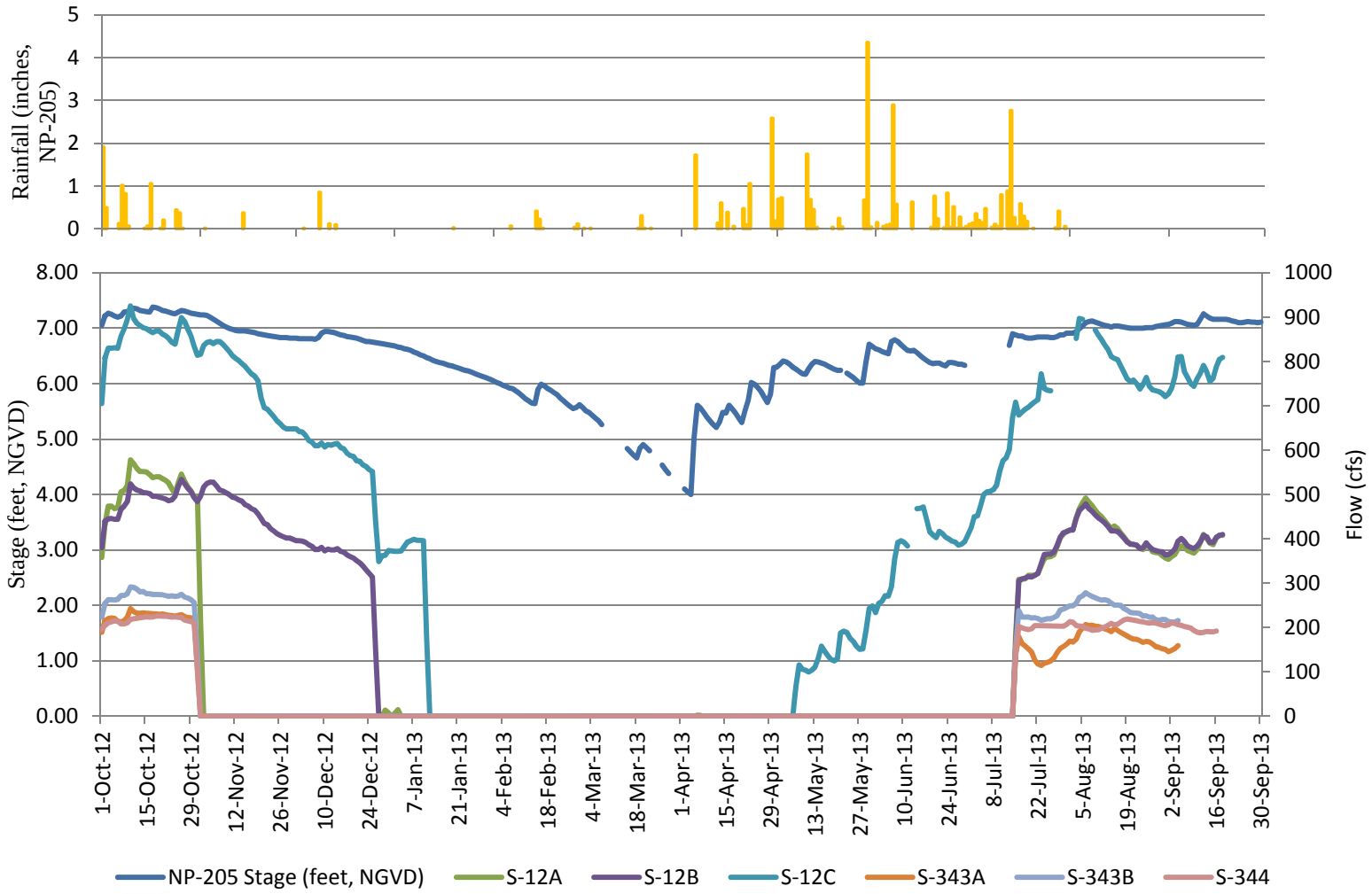

Figure 8. Water control structures S-12A-D, S-343A/B and S-344 FLOW (cfs), NP-205 stage (feet, NGVD) and NP-205 rainfall (inches) for WY13.

VI. ERTP Performance Measures and Ecological Targets

A. Cape Sable Seaside Sparrow

Performance Measure (PM)

A. NP-205 (CSSS-A): Provide a minimum of 60 consecutive days at NP-205 below 6.0 feet, NGVD beginning no later than March 15.

Table 9. Dates that water depths were less than 6.0 feet, NGVD at NP-205 and the number of consecutive dry days at NP-205 during the CSSS nesting window of March 1 through July 15.

Year	Start Date NP-205 < 6.0 feet, NGVD	End Date NP-205 < 6.0 feet, NGVD	Number of Consecutive Days Dry (NP-205 < 6.0 feet, NGVD) between March 1 and July 15
2011	3/1/2011	6/25/2011	117
2012	3/1/2012	5/6/2012	66
2013	3/1/2013	4/23/2013	54

A total of 54 consecutive dry days were experienced at Gauge NP-205 between March 1 and July 15, 2013, therefore, this PM was not met (Table 9). Please refer to Section V.C. (Cape Sable Seaside Sparrow Habitat: Western Marl Prairies) for more details.

CSSS Ecological Targets (ET)

ET-1 (NP-205, CSSS-A): Strive to reach a water level of ≤ 7.0 feet, NGVD at NP-205 by December 31 for nesting season water levels to reach 6.0 feet, NGVD by mid-March.

Table 10. NP-205 water levels (feet, NGVD) on December 31.

Date	NP-205 Stage (feet, NGVD)
31-Dec-10	4.27
31-Dec-11	6.36
31-Dec-12	6.69

As shown in Table 10, the December 31, 2012 stage at Gauge NP-205 was 6.69 feet NGVD and therefore, this ET was met.

ET-2 (CSSS): Strive to maintain a hydroperiod between 90 and 210 days (3 to 7 months) per year throughout sparrow habitat to maintain marl prairie vegetation.

Table 11. Discontinuous hydroperiod (number of days inundated) as measured at the specified gauges within each CSSS subpopulation between October 1, 2012 and September 30, 2013.

Sub-Population	Gauge	Discontinuous Hydroperiod (Days Inundated)	Within 90-210 Preferred Hydroperiod?
A	NP-205	260	No
	P-34	312	No
B	NP-44	160	Yes
C	E-112	264	No
D	EVER-4*	365	No
E	NP-206	291	No
F	RG-2	191	Yes

*: Note: FWS has indicated that EDEN reported ground surface elevation for EVER-4 is incorrect and therefore, the hydroperiod noted within Table 11 may be inaccurate.

A hydroperiod between 90 and 210 days was realized within CSSS-B and CSSS-F (Table 11). The hydroperiod was longer than preferred in CSSS-A, CSSS-C, CSSS-D and CSSS-E (Table 11), therefore this ET was not met in all sub-populations. Figure 10 through Figure 16 depict the mean daily stage for the gauges indentified in Table 11. Figure 10 through Figure 16 were generated using EDEN. Please also note that all of the stage elevations except EVER-4 (Figure 14) are in feet North American Vertical Datum (NAVD) 88.

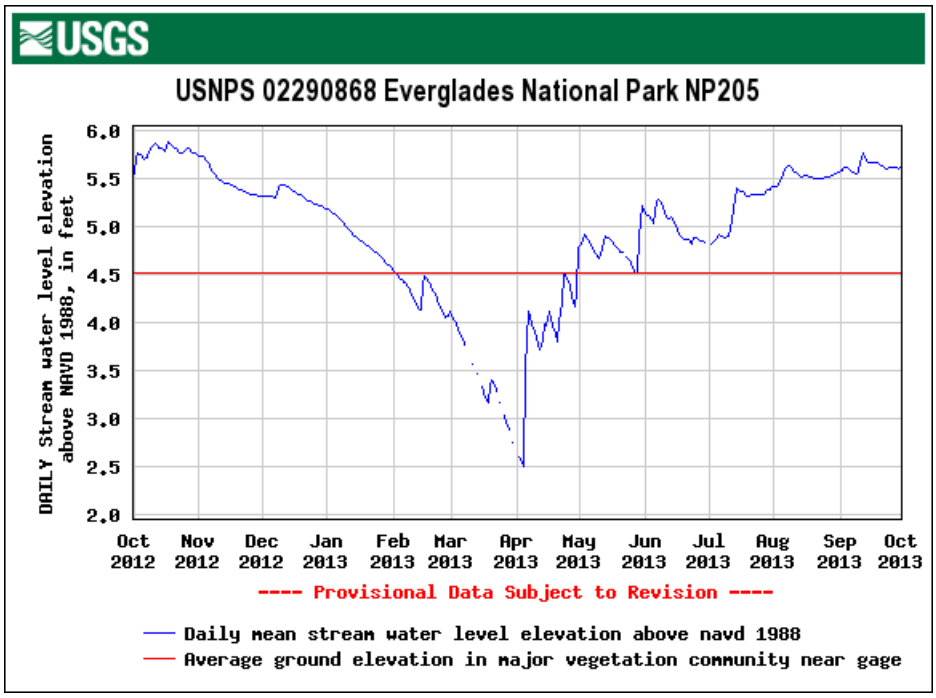

Figure 9. Daily mean stream water level at Gauge NP-205 (feet, NAVD88) for WY13.

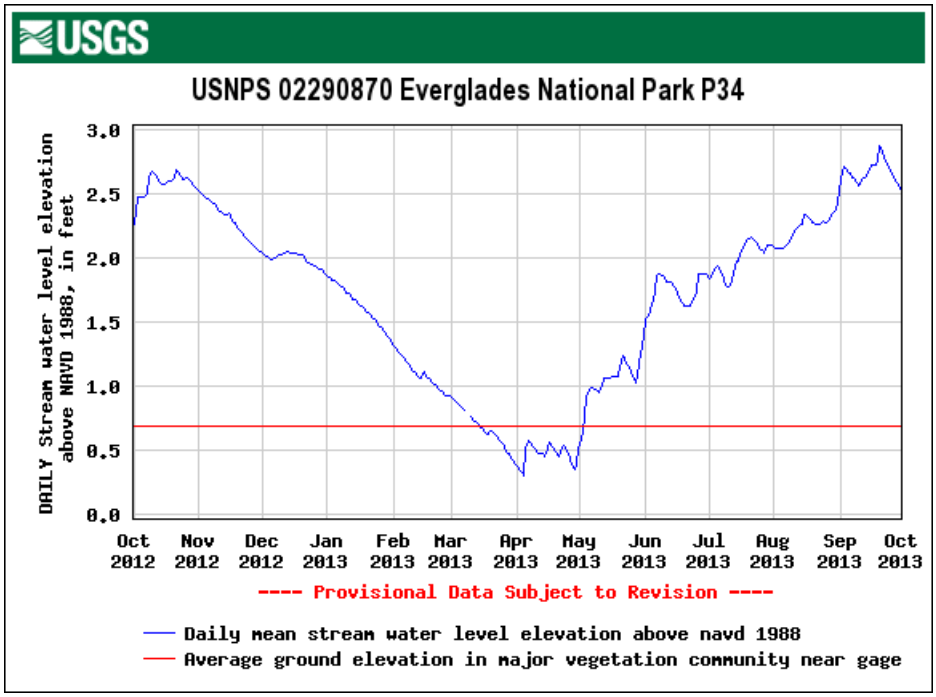

Figure 10. Daily mean stream water level at Gauge P-34 (feet, NAVD88) for WY13.

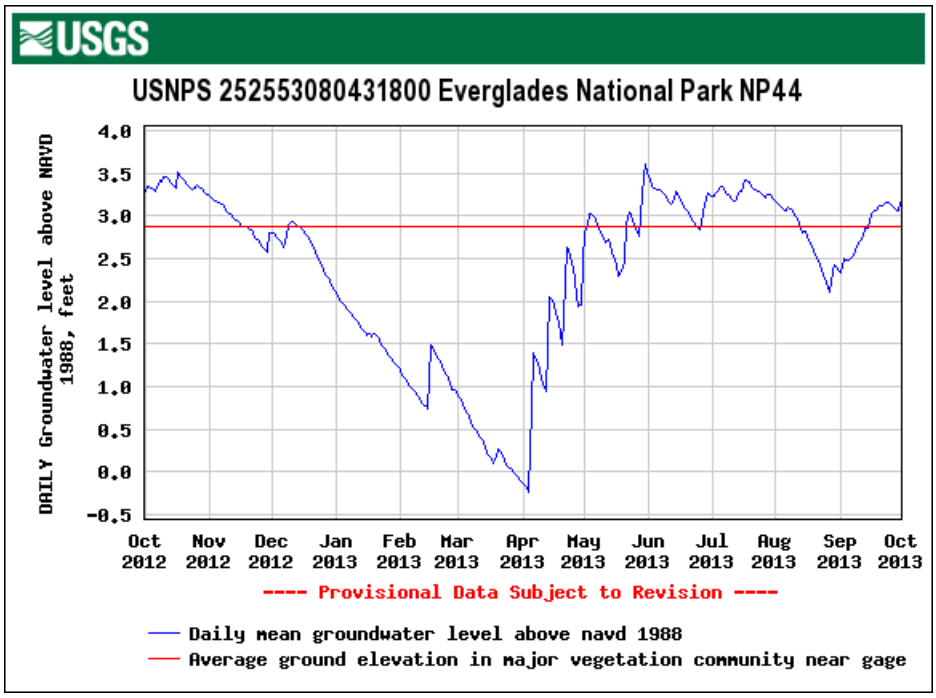

Figure 11. Daily mean groundwater level at Gauge NP-44 (feet, NAVD88) for WY13.

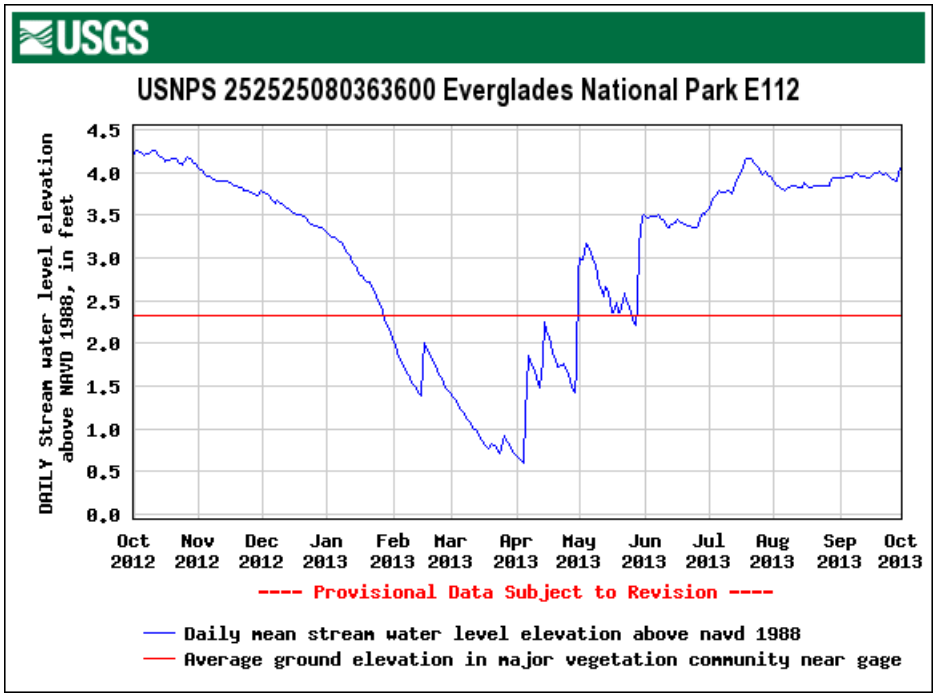

Figure 12. Daily mean stream water level at Gauge E-112 (feet, NAVD88) for WY13.

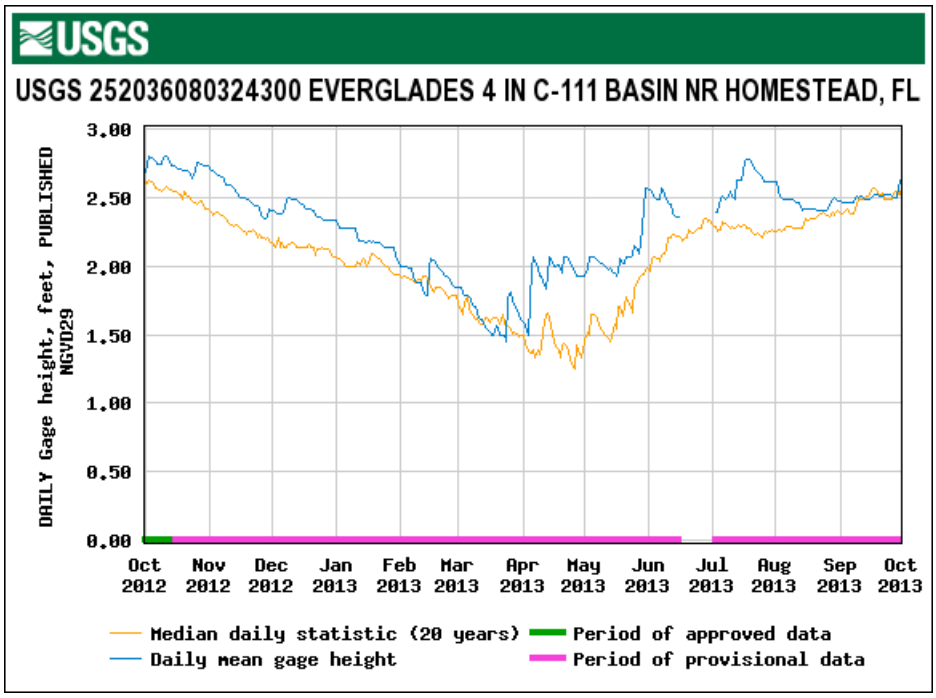

Figure 13. Daily mean gauge height Gauge EVER-4 (feet, NGVD) for WY13.

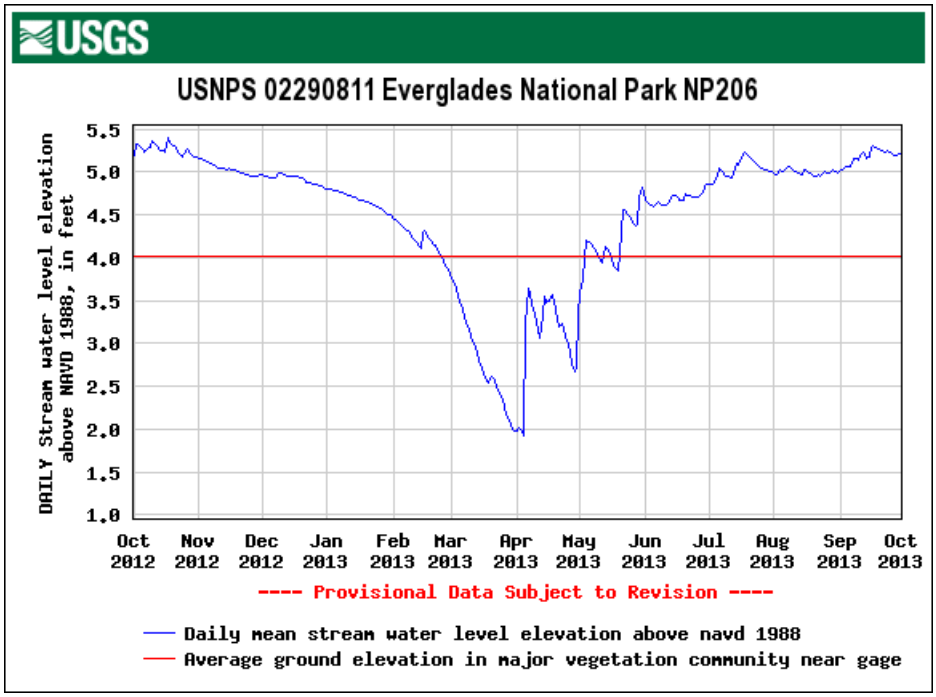

Figure 14. Daily mean stream water level at Gauge NP-206 (feet, NAVD88) for WY13.

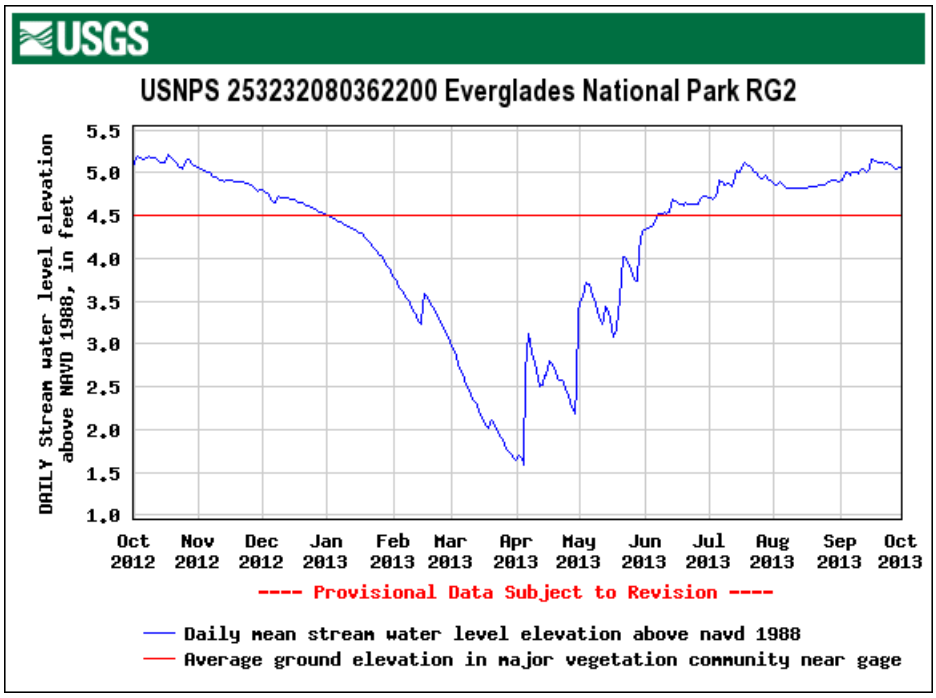

Figure 15. Daily mean stream water level at Gauge RG-2 (feet, NAVD88) for WY13.

B. Everglade Snail Kite

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Site 63, 64, 65])

Performance Measures

B. WCA-3A: For snail kites, strive to reach waters levels between 9.8 and 10.3 feet, NGVD by December 31, and between 8.8 and 9.3 feet, NGVD between May 1 and June 1.

Table 12. WCA-3AVG water levels (feet, NGVD) on December 31 and the maximum and minimum water levels between May 1 and June 1.

Year	Total Annual Precipitation (inches; WCA-3A Radar)	WCA-3AVG Stage (feet, NGVD) December 31	Minimum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)	Maximum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)
2010	-	9.57	-	-
2011	42.33	-	7.66	8.12
2012	59.55	10.24	9.24	10.00
2013	51.56	10.29	9.37	9.57

As shown in Table 12, water levels on December 31 were within the preferred depth range; however, maximum water depth between May 1 and June 1 were higher than preferred during WY13. Although this PM was not met, the Corps attributes the higher than preferred water depths during May 1 to June 1 to rainfall experienced throughout the region and the onset of the wet season. Approximately 8.97 inches of rainfall was reported for WCA-3AVG, resulting in stages exceeding the maximum preferred May 1 to June 1 depth range of 9.3 feet NGVD. During this period of time, WCA-3A outlet structures, S-12A/B, S-343A/B and S-344 were unavailable for use due to mandated CSSS closure periods. The S-12D, S-333 and S-334 structures were discharging during this period and S-12C began discharges in accordance with the WCA-3A Interim Regulation Schedule on May 7, 2013 (Figure 3).

C. WCA-3A: For apple snails, strive to reach water levels between 9.7 and 10.3 feet, NGVD by December 31 and between 8.7 and 9.7 feet, NGVD between May 1 and June 1.

Table 13. WCA-3AVG water levels (feet, NGVD) on December 31 and the minimum and maximum water levels between May 1 and June 1.

Year	Total Annual Precipitation (inches; WCA-3A Radar)	WCA-3AVG Stage (feet, NGVD) December 31	Minimum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)	Maximum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)
2010	-	9.57	-	-
2011	42.33	-	7.66	8.12
2012	59.55	10.24	9.24	10.00
2013	51.56	10.29	9.37	9.57

As shown in Table 13, water levels on December 31 and between May 1 and June 1 were within the preferred depth range during WY13; therefore, this PM was met.

D. WCA-3A (Dry Season Recession Rate): Strive to maintain a recession rate of 0.05 feet per week from January 1 to June 1 (or onset of the wet season). This equates to a stage difference of approximately 1.0 feet between January and the dry season low.

Table 14. Observed weekly recession rate from January 1 through June, 2013 based upon WCA-3AVG. Positive values indicate falling water, negative values indicate rising water.

Week Ending	Recession Rate (feet per week)*	Week Ending	Recession Rate (feet per week)
7-Jan	0.06	24-Mar	0.04
14-Jan	0.07	31-Mar	0.12
21-Jan	0.05	7-Apr	-0.08
28-Jan	0.08	14-Apr	0.05
4-Feb	0.09	21-Apr	-0.04
11-Feb	0.07	28-Apr	0.02
18-Feb	0.02	5-May	-0.28
25-Feb	0.06	12-May	0.04
3-Mar	0.05	19-May	0.06
10-Mar	0.08	26-May	0.05
17-Mar	0.10	2-Jun	-0.24

* Note: Numbers are highlighted to correspond to FWS Multi-Species Transition Strategy (MSTS) stoplight key below (FWS 2010).

FWS 2010 Key:

FWS MSTS Recession Rate (feet per week)
> .10
> 0.05 but ≤ 0.10
0.05
≥ 0.00 but < 0.05
< 0.00

Table 15. Observed WCA-3A stage difference from January 1 through June 1 based upon the WCA-3AVG. Values greater than 1.0 represent stages differences that were greater than recommended between January and June 1. Positive values indicate falling water, negative values indicate rising water.

Year	WCA-3A Stage Difference January 1 to June 1 (WCA-3AVG)
2011	1.90
2012	0.39
2013	0.74

As shown in Table 14 recession rates were greater than preferred for the week ending March 31, all other recession rates were within the green or yellow FWS 2010 ranges. Recession rates reversals occurred during the weeks ending April 7, April 21, May 5 and June 2, 2013 and were attributed to rainfall events within WCA-3A (Table 13). The dry season stage difference did not exceed the preferred range (Table 15). Please refer to Section III.C.1. (Rapid Recession Rates and Amplitude) and Section IV.B, PM-B for further details.

E. WCA-3A (Wet Season Rate of Rise): Manage for a monthly rate of rise ≤0 .25 feet per week to avoid drowning of apple snail egg clusters.

Table 16. Weekly rate of rise (feet/week) based on the WCA-3AVG for the months of February through September. Positive values indicate falling water, negative values indicate rising water.

Year	Average Weekly Rate of Rise (feet/week) based upon WCA-3AVG stage							
	February	March	April	May	June	July	August	September
2011	0.08	0.06	0.16	0.10	-0.23	-0.08	-0.15	-0.09
2012	0.04	0.12	0.02	-0.15	-0.10	0.01	-0.09	-0.18
2013	0.06	0.09	-0.03	-0.03	-0.19	-0.29	0.08	0.00

Table 16 indicates that the average weekly rate of rise exceeded 0.25 feet per week in July 2013. However, PM-E was achieved for all other months.

Ecological Target

ET-3. WCA-3A (Dry Years): Strive to maintain optimal snail kite foraging habitat by allowing water levels to fall below ground surface level between 1 in 4 and 1 in 5 years (208-260 weeks average flood duration) between May 1 and June 1 to promote regenerations of marsh vegetation. Do not allow water levels below ground surface for more than 4 to 6 weeks to minimize adverse effects on apple snail survival.

Table 17. Number of days during May 1 to June 1 in which water levels were below ground surface level as measured at Gauge 3A-3 (Site 63), 3A-4 (Site 64) and 3A-28(Site 65).

Year	Gauge 3A-3	Gauge 3A-4	Gauge 3A-28
2011	32	32	0
2012	31	31	0
2013	0	0	0

As shown in Table 17 and Figure 16, water levels did not fall below surface elevation at any of the listed gauges during the May 1 to June 1, 2013 time period. As per the ERTP BO, in July 2011, USACE contracted Phillip Darby, Ph.D to monitor apple snails within WCA-3A. Further information concerning apple snail population estimates is available within the 2012 Apple Snail Monitoring Report (Darby 2012). Monitoring data reveal very few apple snails were encountered within WCA-3A during 2012 and documented the presence of exotic apple snails within WCA-3A (*Pomacea maculata*).

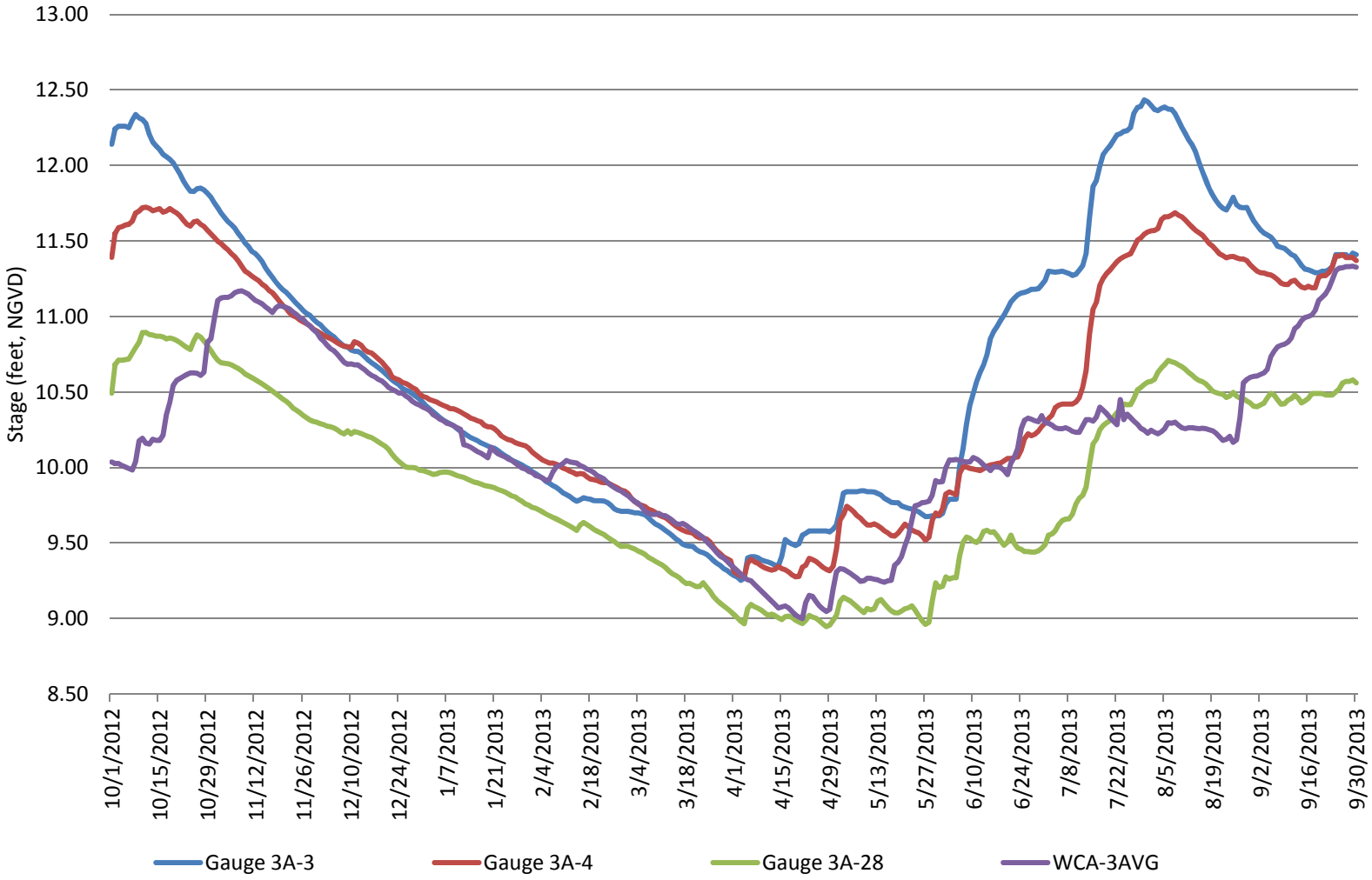

Figure 16. WCA-3A Stage (feet, NGVD) as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and WCA-3AVG (average of Gauges 3A-3, 3A-4 and 3A-28) during WY13.

C. Wood Stork and Wading Birds

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Sites 63, 64, 65])

Performance Measures

F. WCA-3A Dry Season Recession Rate: Recession rate of 0.07 feet per week, with an optimal range of 0.06 to 0.07 feet per week, from January 1 to June 1.

Table 18. Observed weekly recession rate from January 1 through June 1, 2013 based upon WCA-3AVG. Positive values indicate falling water, negative values indicate rising water.

Week Ending	Recession Rate (feet per week)	Week Ending	Recession Rate (feet per week)
7-Jan	0.06	24-Mar	0.04
14-Jan	0.07	31-Mar	0.12
21-Jan	0.05	7-Apr	0.08
28-Jan	0.08	14-Apr	0.05
3-Feb	0.04	21-Apr	-0.04
10-Feb	0.07	28-Apr	0.02
17-Feb	0.03	5-May	-0.28
24-Feb	0.05	12-May	0.04
3-Mar	0.06	19-May	0.06
10-Mar	0.08	26-May	0.05
17-Mar	0.10	2-Jun	0.16

* Note: Numbers are highlighted to correspond to FWS MSTS stoplight key below (FWS 2010).

FWS 2010 Key:

FWS MSTS Recession Rate (feet per week)
< 0.17
> 0.07 but ≤ 0.17
Preferred 0.06-0.07
≥ -0.05 but < 0.06
< -0.05

Recession rates for wood storks and wading birds, particularly within the early dry season were within, or near the preferred range (Table 18). In addition, due to rainfall events, reversals were experienced during late April and early May with a reported reversal on

May 5, 2013 of 0.28 feet/week. As previously discussed within Section III.C.1. (Rapid Recession Rates and Amplitude), USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession rates experienced during the 2013 dry season (i.e. January 1 through June 1 2011) and how future operations can avoid exceeding these thresholds. The USACE retrospective review consisted of the same methodology employed for WY11 and WY12. Since the majority of WCA-3A outlet structures (i.e. S-12A & B, S343A/B and S-344) were closed during this period, S-12C & D were opened as needed per the Rainfall Plan, S-333 was opened as needed per the Rainfall Plan as well as to meet Lower East Coast water supply demands (as permitted by WCA-3A Interim Regulation Schedule), and rapid recession rates were attributed to dry season evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future.

G. WCA-3A (Dry Season): Strive to maintain areas of appropriate foraging depths (5-25 cm) within the Core Foraging Area (18.6 mile radius, CFA) of any active wood stork colony.

In order to assess WY13 in relation to PM-G, an analysis of wood stork foraging water depths in WCA-3 was performed for the time period of October 1, 2012 through September 30, 2013. The following information regarding wood stork colonies, locations, gauges and foraging depths was provided by Lori Miller (FWS, 2010). All data used herein were obtained from EDEN; all data is considered provisional and subject to change, unless otherwise noted.

Wood storks are known to forage in a 360-degree radius of 30 km (18.6 statute miles) from an active colony (FWS 2010; Cox et al. 1994). The optimal water depth for wood storks is 14-15 cm with suboptimal dry water depths ranging from -9 to 4 cm and suboptimal wet water depths ranging from 26 to 40 cm (FWS 2010; Beerens and Cook, unpublished report 2010). Table 19 lists wood stork colonies with core foraging area (CFA) extending into WCA-3A and WCA-3B. Colony locations and CFAs are depicted in Figure 18.

Table 19. Wood stork colonies with Core Foraging Area in WCA-3.

COLONY	COUNTY	LAST ACTIVE	2013 NESTING PAIRS	LATITUDE	LONGITUDE
2B Melaleuca	Broward	2001		26.163	-80.348
Crossover	Miami-Dade	2009		25.925	-80.835
Jetport	Miami-Dade	2009	45	25.885	-80.844
Jetport South	Miami-Dade	2011	400	25.805	-80.849
3B Mud East	Miami-Dade	2009		25.798	-80.494
Tamiami Trail East	Miami-Dade	2010		25.758	-80.508
Tamiami Trail East 2	Miami-Dade	2010		25.760	-80.508
Tamiami Trail West	Miami-Dade	2011	500	25.760	-80.545
Grossman Ridge West	Miami-Dade	2011		25.636	-80.653

Data was obtained from 2013 Interim Wading Bird provided by Peter Frederick in accordance with ERTP BO monitoring.

Table 20 lists gauges analyzed for wood stork CFA within WCA-3A and WCA-3B using elevations obtained through EDEN. Gauge locations are depicted in Figure 19. Table 21 identifies the gauges that are included within the CFA of each active wood stork colony. Please note that although PM-G is specific to active wood stork colonies, the water depth analysis performed within this section examines water depths at each potential colony site listed within Table 19 to determine whether water depths would have been within the appropriate foraging range for the species.

Table 20. Gauges analyzed for wood stork Core Foraging Area water depths.

GAUGE	DESCRIPTION
3A3 (Site 63)	Northeastern WCA-3A
3A4 (Site 64)	Central WCA-3A
3ASW	West-central WCA-3A
3A28 (Site 65)	Southern WCA-3A
3B2 (Site 71)	Central WCA-3B
3BS1W1	Southeastern WCA-3B

Figure 17. Location of wood stork colonies and gauges used for evaluation of PM-G. Circles represent the Core Foraging Area of the colony.

Table 21. List of gauges that occur within the Core Foraging Area of the identified wood stork colonies.

COLONY	GAUGE									
	3A3	3A4	3ASW	3A28	3B2	3BS1W1	NE-1	NP-203	NP-205	NP-206
Tamiami East		X		X	X	X	X	X		X
Tamiami East 2		X		X	X	X	X	X		X
Tamiami West (NESRS)		X		X	X	X	X	X		X
2B Melaleuca	X									
Crossover (WCA-3A)		X	X	X	X				X	
Jetport (WCA-3A)		X	X	X	X				X	
Mud East (WCA-3B)		X		X	X	X	X	X		X
Jetport South (WCA-3A)		X	X	X	X		X		X	
Grossman's Ridge West				X	X	X	X	X	X	X

The wood stork analysis employed daily stage data for the gauges listed in Table 20 in feet NGVD29. Water depths were obtained by subtracting the average ground elevations

(obtained from EDEN and converted to NGVD29) from the daily stage in feet NGVD29. Water depths were then converted to centimeters by multiplying values by 30.48 (30.48 cm = 1 foot). These water depths, now in centimeters, were then used to graph daily foraging depths in Microsoft Excel. On these graphs, the red-yellow-green light method was used to illustrate WY13 water depths. Table 22 illustrates the values used for the red-yellow-green light method. Graphs for gauges within WCA-3 are included within this document as Figure 19 and Figure 20.

Table 22. Foraging water depths in centimeters using the Red-Yellow-Green light method (red = undesirable/unavailable, yellow = suboptimal and green = optimal).

Water Depth (centimeters)
< -9 cm
-9 to 4 cm
5 to 25 cm
26 to 40 cm
> 40 cm

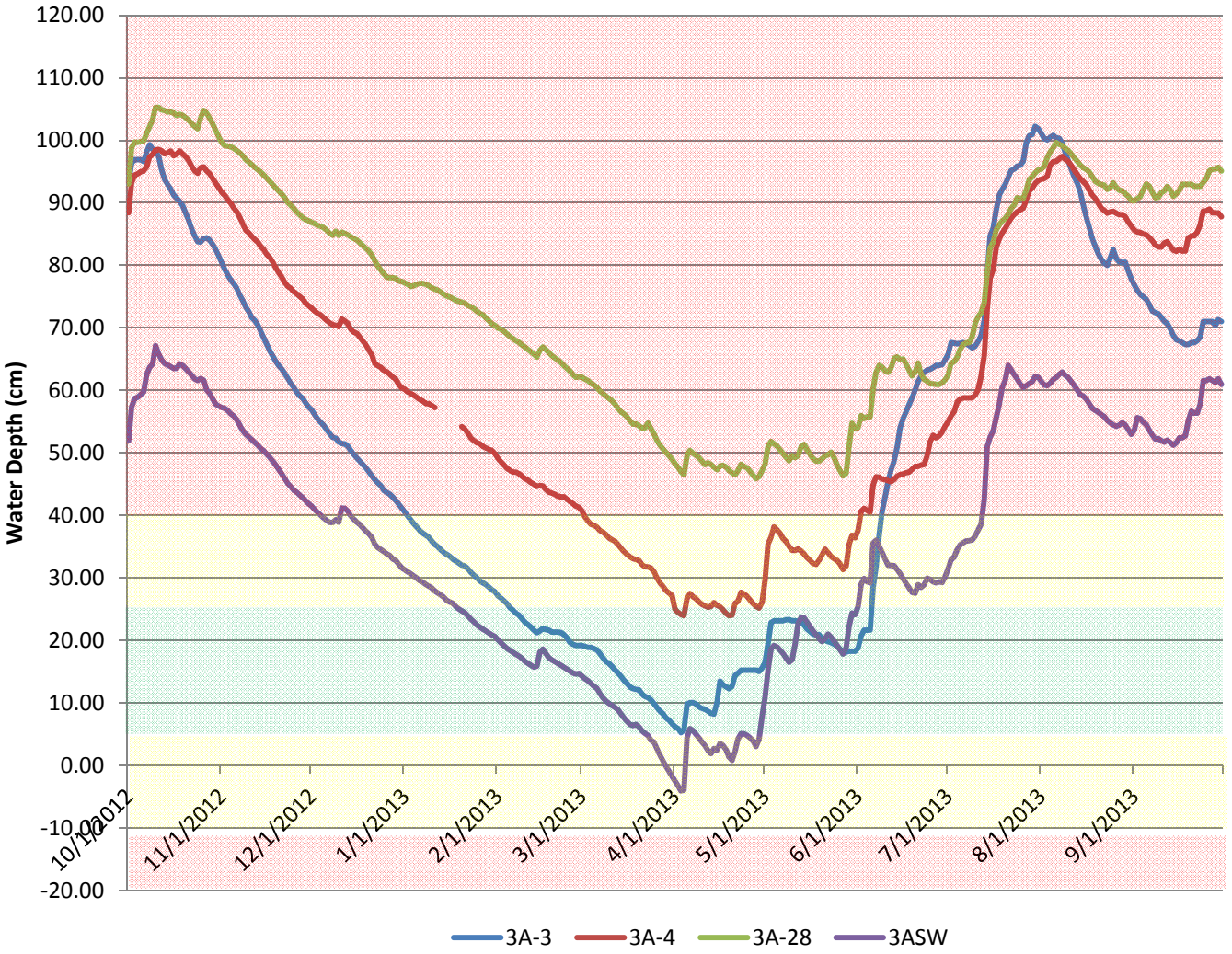

Figure 18. Wood stork foraging depths within WCA-3A as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and Gauge 3ASW.

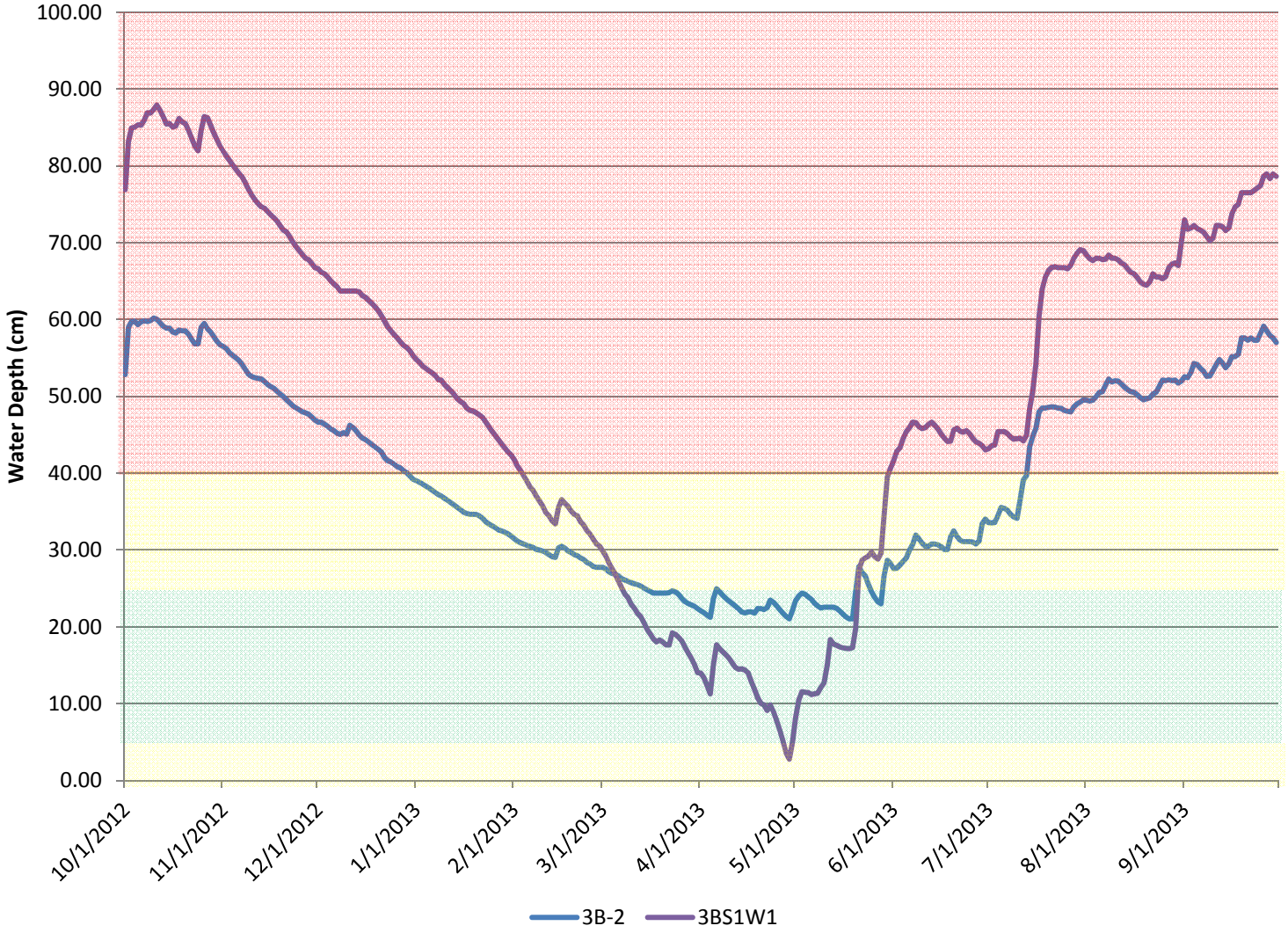

Figure 19. Wood stork foraging depths with WCA-3B as measured at Gauge 3B-2 and Gauge 3BS1W1.

As illustrated in Figure 18 and Figure 19, suitable water depths (optimal/sub-optimal) for wood stork foraging within WCA-3A were available throughout much of the wood stork nesting season at Gauge 3A-3 and 3ASW. However, undesirable water depths at Gauge 3A-3 and 3ASW occurred between October and December 2012 and after mid-July. Appropriate foraging depths were experienced between March and June at Gauge 3A-4 and were not attained at Gauge 3A-28 in southern WCA-3A during WY13. In WCA-3B, water depths at Gauge 3B-2 were appropriate for wood stork foraging throughout much of WY13, with the exception of periods during October through December 2012 and mid July through September 2013 (Figure 19). Depths experienced at Gauge 3BS1W1 were deeper than those required to support foraging wood storks throughout much of WY13 with the exception of mid-February through late May 2013. As shown in Table 18, two reversals occurred due to rainfall events during the week ending April 21, 2013 and again during the week ending May 5, 2013. Between November 2012 and February 2013, suitable foraging depths were available in the area around Gauge 3A-3 and Gauge 3ASW, after which time, water depths dropped below suitable levels. For further information regarding water management activities during the wood stork breeding season, please refer to Section III.C.1 (Rapid Recession Rates and Amplitude). The 2013 South Florida Water Management District Annual Wading Bird Report is expected to be available in December 2013 (www.sfwmd.gov).

H. WCA-3A (Dry Season): Strive to maintain areas of appropriate foraging depths (5-15 cm) within the Core Foraging Area (7 to 9 mile radius) of any active white ibis or snowy egret colony.

In order to assess WY13 in relation to PM-H, an analysis of white ibis foraging water depths in WCA-3 was performed for the time period of October 1, 2012 through September 30, 2013. The following information regarding white ibis colonies, locations, gauges and foraging depths was provided by Lori Miller (FWS, 2010). All data used herein were obtained from EDEN, all data is considered provisional and subject to change, unless otherwise noted.

White ibis are known to forage in a 360-degree radius of 10 km (6.2 statute miles) from an active colony (FWS 2010; Bancroft et al. 1994). The optimal water depth for white ibis foraging in WCA-3 is 7-16 cm with suboptimal dry water depths ranging from -15 to 6 cm and suboptimal wet water depths ranging from 17 to 31 cm (FWS 2010, Beerens 2008). Table 23 lists active white ibis colonies with CFAs extending into WCA-3 from 2002 through 2012. Colony locations and CFAs are depicted in Figure 21.

Table 23. Number of active white ibis nests in the ERTP action area as reported by the South Florida Wading Bird Reports from 2002 through 2012. The 2013 South Florida Wading Bird Report is expected in December 2013.

COLONY	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Tamiami West	400	150		500	600	400		5,000		+	2,500	NA
3B Mud East		122	1,153		203							NA
6th Bridge						10,661	1,000		124	5,000	296	NA
Alley North	20,000	6,033	16,000	12,750	13,566	8		17,200	500		6,500	NA
Anhinga Alley												NA
Big Melaleuca												NA
Big Pond												NA
Cypress City												NA
East Central Ag												NA
Ganga								9				NA
Heron Alley												NA
L-67												NA
Pocket												NA
Unnamed 2			56									NA
West Ag Canal				16								NA
West Central Ag												NA
Total	20,400	6,305	17,209	13,250	14,385	11,269	1,000	22,209	624			NA

+: Indicates species present and nesting, but unable to determine numbers.
NA: No Data Available.

Table 24 lists gauges analyzed for white ibis CFA within WCA-3A and WCA-3B using elevations obtained through EDEN. Gauge locations are depicted in Figure 21. Table 25 identifies the gauges that are included within the CFA of each active white ibis colony. Please note that although PM-H is specific to active white ibis colonies, the water depth analysis performed within this section examines water depths at each potential colony site listed within Table 23 to determine whether water depths would have been within the appropriate foraging range for the species.

Table 24. Gauges analyzed for white ibis Core Foraging Areas water depths.

GAUGE	DESCRIPTION
3A3 (Site 63)	Northeastern WCA-3A
3A4 (Site 64)	Central WCA-3A
3ASW	West-central WCA-3A
3A28 (Site 65)	Southern WCA-3A
3B2 (Site 71)	Central WCA-3B
3BS1W1	Southeastern WCA-3B

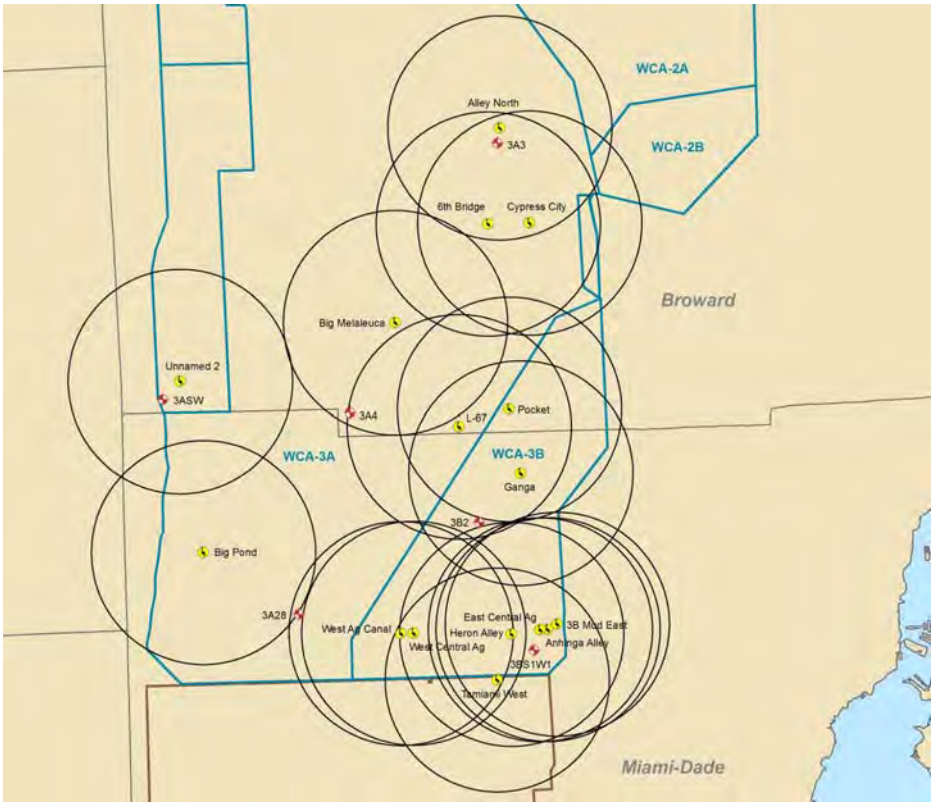

Figure 20. Location of white ibis colonies and gauges used for evaluation of PM-H. Circles represent the Core Foraging Area of the colony.

Table 25. List of gauges that occur within the Core Foraging Area of the identified white ibis colonies.

COLONY NAME	GAUGE					
	3A3	3A4	3ASW	3A28	3B2	3BS1W1
Tamiami West (NESRS)						X
Mud East (WCA-3B)					X	X
6th Bridge	X					
Alley North	X					
Anhinga Alley					X	X
Big Melaleuca		X				
Big Pond				X		
Cypress City	X					
East Central Ag					X	X
Ganga					X	
Heron Alley					X	X
L-67		X			X	
Pocket					X	
Unnamed 2			X			
West Ag Canal				X		X
West Central Ag				X	X	X

The white ibis analysis employed daily stage data for the gauges listed in Table 24 in feet NGVD29. Water depths were obtained by subtracting the average ground elevations (obtained from EDEN and converted to NGVD29) from the daily stage in feet NGVD29. Water depths were then converted to centimeters by multiplying values by 30.48 (30.48 cm = 1 foot). These water depths, now in centimeters, were then used to graph daily foraging depths in Microsoft Excel. On these graphs, the red-yellow-green light method was used to illustrate WY13 water depths. Table 26 illustrates the values used for the red-yellow-green light method. Graphs for gauges within WCA-3 are included within this document as Figure 21 and Figure 22.

Table 26. Foraging water depths in centimeters using the Red-Yellow-Green light method (red=undesirable/unavailable, yellow=suboptimal and green=optimal).

Water Depth (centimeters)
<-16 cm
-15 to 6 cm
7 to 16 cm
17 to 31 cm
>32 cm

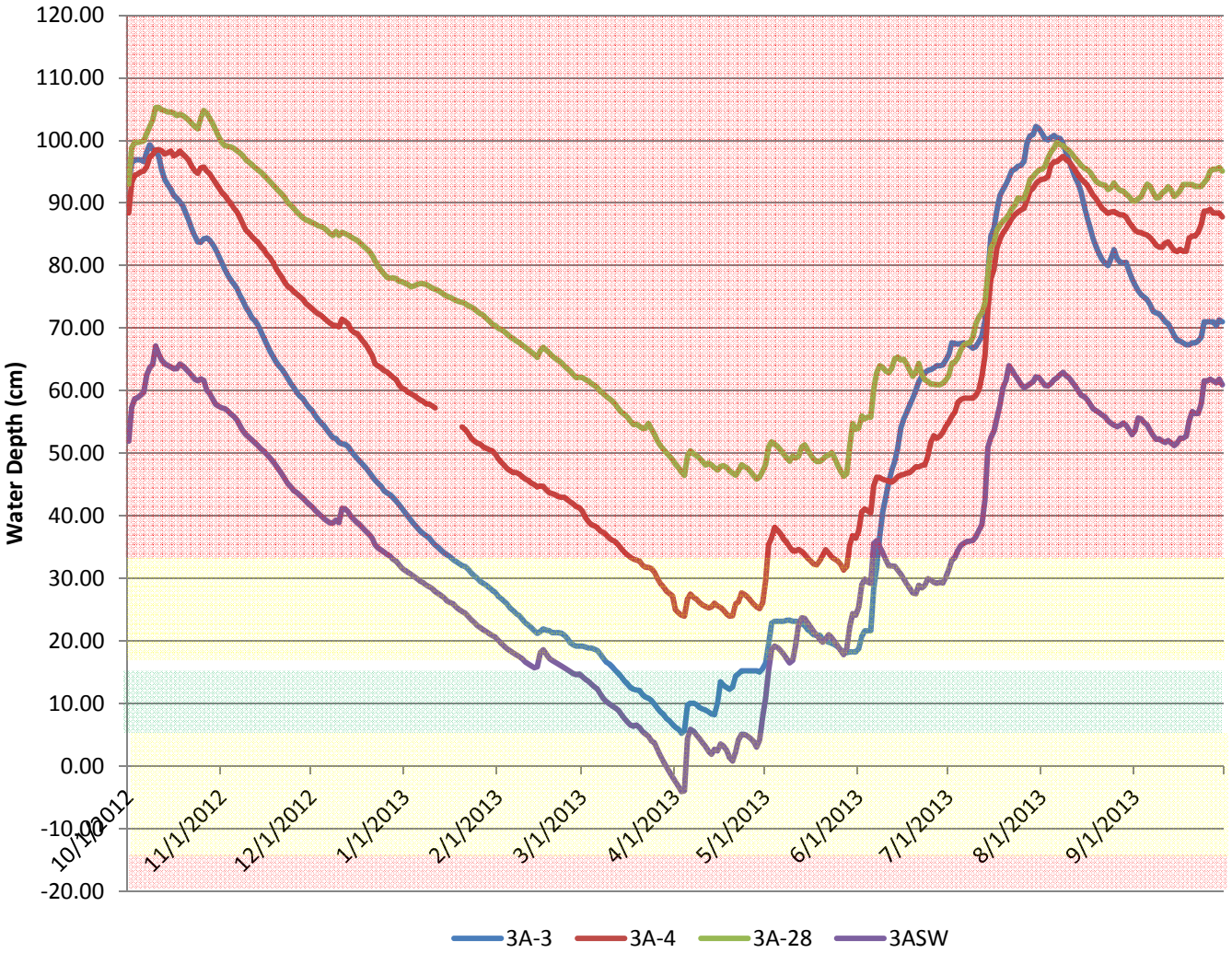

Figure 21. White ibis foraging depths within WCA-3A as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and Gauge 3ASW.

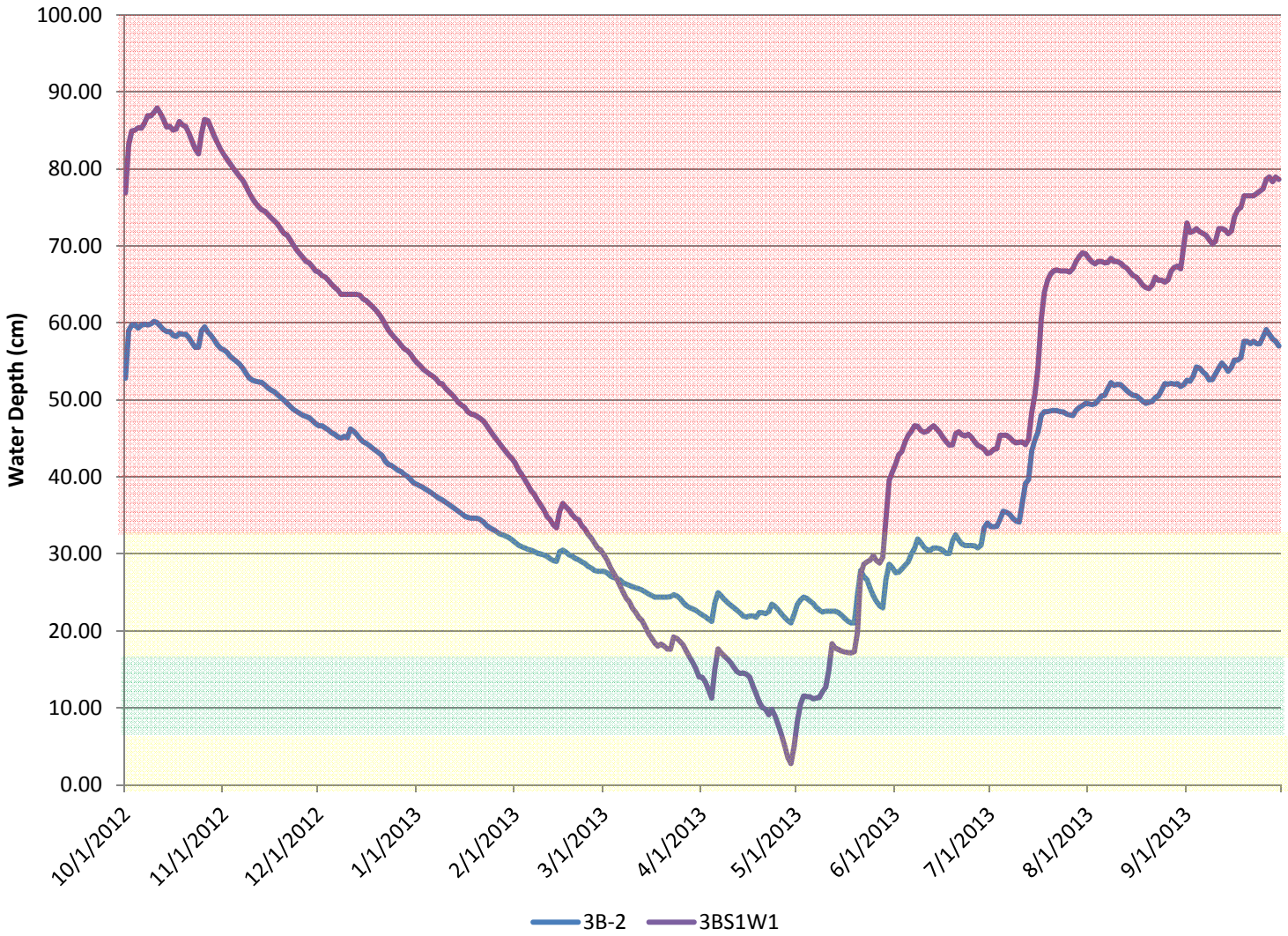

Figure 22. White ibis foraging depths within WCA-3B as measured at Gauge 3B-2 and Gauge 3BS1W1.

As illustrated in Figure 21, suitable water depths (optimal/sub-optimal) for white ibis foraging within WCA-3A were available throughout much of WY13 nesting season at Gauge 3A-3 and 3ASW. Sub-optimal foraging depths were experienced between April and May at Gauge 3A-4 and were not attained at Gauge 3A-28 in southern WCA-3A during WY13. In WCA-3B, water depths at Gauge 3B-2 were appropriate (sub-optimal) for white ibis foraging throughout a portion of WY13, with the exception of periods during November and December 2012 and July through September 2013 (Figure 22). Depths experienced at Gauge 3BS1W1 were also deeper than those required to support foraging white ibis other than during the period between late February and June 2013. As shown in Table 18, two reversals occurred due to rainfall events during the week ending April 21, 2013 and again during the week ending May 5, 2013. For further information regarding water management activities during the white ibis breeding season, please refer to Section III.C.1 (Rapid Recession Rates and Amplitude). The 2013 South Florida Water Management District Annual Wading Bird Report is expected to be available in December 2013 (www.sfwmd.gov).

D. Tree Islands

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Sites 63, 64, 65])

Performance Measure

I. WCA-3A: For tree islands, strive to keep high water peaks < 10.8 feet, NGVD, not to exceed 10.8 ft for more than 60 days per year, and reach water levels < 10.3 feet, NGVD by December 31.

Table 27. WCA-3A peak high water levels, number of days WCA-3AVG was greater than 10.8 feet, NGVD during WY13 and the WCA-3AVG stage (feet. NGVD) on December 31.

Year	WCA-3AVG High Water Peak Stage (feet, NGVD)	Number of Days WCA-3AVG > 10.8 feet, NGVD	WCA-3A Stage (feet, NGVD) on December 31
2010	10.68	0	9.57
2011	11.33	59	10.40
2012	11.64	135	10.29

As indicated in Table 27, water levels as measured at WCA-3AVG exceeded 10.8 feet, NGVD for a total of 135 days during WY13. Between October 1, 2011 and November 25, 2012 water levels as measured at the WCA-3AVG exceeded 10.8 feet NGVD for a period of 56 days. Water levels again exceeded 10.8 feet NGVD for a period of 79 days between July 14 and September 30, 2013. PM-I was not achieved in WY13.

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DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

NOV 17 2014

Mr. Larry Williams, State Supervisor
South Florida Ecological Services Field Office
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960-3559

Dear Mr. Williams,

In accordance with the November 17, 2010 U.S. Fish and Wildlife Service (Service) Biological Opinion on the Everglades Restoration Transition Plan (ERTP), the U.S. Army Corps of Engineers (Corps) prepared the enclosed annual assessment for Water Year 2014. The assessment documents water management operations and includes an analysis of Incidental Take and ERTP Performance Measures. Based upon preliminary data collected by Everglades National Park (ENP) as part of the 2014 Cape Sable seaside sparrow (CSSS) range-wide survey, it appears that the annual population estimate of CSSS has fallen below the reinitiation trigger defined within the November 17, 2010 ERTP Biological Opinion. Therefore, pursuant to requirements of the Biological Opinion, the Corps is requesting reinitiation of consultation.

The Corps also completed a retrospective review of ERTP operations during the 2013 nesting season, as operations during this time period would have the potential for the greatest impact on population estimates for the 2014 nesting season. Based upon this retrospective review, the Corps concludes that all water management operations were in accordance with 2012 ERTP. In addition, the S-12C structure which does not have any mandated closure period for protection of this subspecies, was closed for much of the 2013 nesting season in accordance with the Water Conservation Area 3A Rainfall-Based Management Plan. Closure of the S-12C structure further restricts flow into ENP and western Shark Slough where CSSS, subpopulation A, resides. Therefore, the Corps concludes that water management operations did not contribute to the transition from groundwater to surface water at Gauge NP-205 during Water Year 2013 or Water Year 2014. The Corps has also initiated the Modified Water Deliveries to ENP Project Increment 1 Field Test, in which the Gauge 3273 constraint will be relaxed to allow additional flow into ENP's Northeast Shark River Slough. This effort will further restrict water flow within western ENP.

During the Endangered Species Act consultation for the Central Everglades Planning Project, a number of items were discussed that could facilitate CSSS recovery. During this consultation, the Service noted the need for a better survey methodology and population estimator to more accurately assess CSSS population size. Recently, ENP personnel reported that there were apparent anomalies with CSSS range-wide survey data and in particular, with negative data. Anomalies with the negative data center around the concern that the database does not discern between sites apparently surveyed in which birds were not encountered versus sites that were never surveyed. This anomaly (among others) would affect the accuracy of data reported, thus calling into question the information that was used to establish the Incidental Take trigger within the 2010 ERTP Biological Opinion. ENP further indicated that they are in the process of performing a quality assessment/quality control review of the entire database to ensure accuracy. This effort will assist to provide a more accurate accounting of survey data.

As shown in Table 7 in the enclosed assessment, CSSS, subpopulation A, has not recovered under the 1998/1999 Emergency Deviations, 2000-2002 Interim Structural and Operational Plan, 2002-2006 Interim Operational Plan for Protection of the CSSS or 2012-2014 ERTP operations. There are several factors that influence population size including competition, predation and prey availability. Recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (Boulton et al. 2009; Virzi et al. 2009). In addition, ENP has been identified as a hotspot for methylmercury, which has been shown to have sub-lethal effects on songbirds resulting in reduced reproductive success (Jackson et al. 2011).

The Jacksonville District suggests that species recovery focus on identifying vital rates that would have the greatest effect on enhancing CSSS populations in order to increase resiliency of the subspecies for future restoration under the Comprehensive Everglades Restoration Plan (CERP) and other efforts focused upon increased water deliveries within ENP to restore historic ridge and slough habitats. Subsequent refinements to 2012 ERTP that result in further restrictions of water deliveries to ENP for protection of CSSS are contrary to CERP restoration goals and would further result in adverse effects to other species as documented within the 2014 RECOVER System Status Report.

Despite the lack of apparent connection between water management operations and preliminary CSSS population data results, in accordance with the 2010 ERTP Biological Opinion, please view this correspondence as reinitiation of formal consultation under the Endangered Species Act of 1973, as amended.

The Corps requests that the Service review and consider information within the enclosed assessment in its reinitiation process and respectfully requests that any subsequent opinion incorporate 1) incidental take trigger amendments to reflect consideration of new information provided; and 2) ENP quality assessment/quality control review of the CSSS range-wide survey data. Your point of contact for this effort is Dr. Gina Ralph at 904-232-2336. We look forward to continued cooperative efforts on this important matter.

Sincerely,

Eric P. Summa
Chief, Environmental Branch

Enclosure

ANNUAL ASSESSMENT REPORT: WATER YEAR 2014 (OCTOBER 1, 2013-SEPTEMBER 30, 2014)

Everglades Restoration Transition Plan

Prepared by
Department of the Army
Jacksonville District Corps of Engineers

NOVEMBER 2014

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. Introduction

In accordance with the Terms and Conditions contained within the November 17, 2010 U.S. Fish and Wildlife Service (FWS) Biological Opinion (BO) on the Everglades Restoration Transition Plan (ERTP), the U.S. Army Corps of Engineers (USACE) is required to provide an annual assessment of ERTP operations. This annual assessment includes a summary of Periodic Scientists Calls, analysis of incidental take, analysis of ERTP performance measures and ecological targets and species monitoring. The Incidental Take Statements (ITS), Terms and Conditions and Reinitiation Notice are defined in the 2010 ERTP BO. Periodic Scientists Calls documentation reports are on file at USACE and are available upon request. Species monitoring reports will be provided to FWS upon USACE receipt from Principal Investigators (those performing monitoring requirements) in accordance with monitoring contract schedules. All data used within this analysis was obtained from either the DBHYDRO database (http://my.sfwmd.gov/dbhydroplsql/show_dbkey_info.main_menu) maintained by the South Florida Water Management District or the Everglades Depth Estimation Network (EDEN) (http://sofia.usgs.gov/eden/stationlist.php), maintained by the United States Geological Survey. Please note that all data are considered provisional and subject to change, unless otherwise noted. For additional information concerning Section II of this report, please contact Olice Williams at Olice.E.Williams@usace.army.mil; for additional information concerning the remainder of this document, please contact Dr. Gina Ralph at Gina.P.Ralph@usace.army.mil.

The ERTP Record of Decision was signed October 19, 2012, thereby implementing ERTP operations. Water management operations prior to October 19, 2012 were in accordance with the 2006 Interim Operational Plan for Protection of the Cape Sable Seaside Sparrow (IOP).

II. Periodic Scientists Calls

A. Summary of Input Received by Agency

As part of the Water Conservation Area 3 (WCA-3) Periodic Scientists Call (PSC) process, members of Federal, State and Local Agencies, Tribes and the general public are invited to comment. Table 1 provides a summary of input from Federal, State and Local Agencies as well as the Miccosukee Tribe of Indians of Florida provided for the PSCs within Water Year 2014 (WY14, October 1, 2013 through September 30, 2014).

B. Summary of Actions Taken by USACE

Table 1 provides a summary of water management operations for WY14. Operations include releases in accordance with the Central &Southern Florida Project Water Control Plan for Water Conservation Areas, Everglades National Park and Everglades National Park-South Dade Conveyance System (WCAs-ENP WCP). WCAs-ENP WCP operations include making WCA-3A Rainfall-Based Management Plan target flow releases at the S-12 and S-333 structures. WCAs-ENP WCP operations also include WCA-3A Interim Regulation Schedule releases that may include releases through S-343A, S-343B, S-344, S-151 and S-31. Operations also include discharges through S-333 as needed for water supply purposes for Miami-Dade County.

C. USACE Decision-Making Rationale (Considerations)

Factors taken into consideration when performing water management operations include, but are not limited to, potential impacts to public health and safety, as well as water supply needs, local basin runoff, current weather conditions, forecasted weather conditions, ecological conditions, flood protection, salinity control, groundwater control, estuary conditions, agricultural irrigation, and recreation.

D. Summary Hydrologic Results

WCA-3A water management actions taken between October 2013 and December 2013 were to retain water in WCA-3A to the maximum extent practicable while remaining consistent with ERTP for the purpose of achieving the PSC desired elevation of 10.4 feet, NGVD. WCA-3A water management actions taken between January 2014 and June 2014 were to minimize releases from WCA-3A while remaining consistent with ERTP for the purpose of maintaining FWS Multi-Species Transition Strategy recession rates ranging between 0.05 feet per week and 0.12 feet per week. WCA-3A water management actions taken between July 2014 and the remainder of WY14 (September 30, 2014) were to maximize releases from WCA-3A while remaining consistent with ERTP for the purpose of promoting a moderate ascension (not exceeding 0.25 feet per week) of the water level elevation to the target stage of 10.5 feet, NGVD by October 01, 2014.

E. Conclusions

All operational decisions remained consistent with 2012 ERTP. Releases from WCA-3A were based on the WCA-3A Rainfall-Based Management Plan target flows while taking into consideration the multiple sources of input including the PSC forum.

Table 1. Water Conservation Area 3 Periodic Scientists Call: Summary of recommendations, decisions and hydrologic effects for WY14 (October 2013 through September 30, 2014).

PSC Date	Summary of Agency Input Received	Summary of Actions Taken	USACE Decision	USACE Decision Rationale	Resulting Analysis
November 14, 2013	Water management efforts should focus on reducing releases from Water Conservation Area 3A (WCA-3A) in an effort to retain water in WCA-3A to the maximum extent practicable to achieve the desired elevation of 10.4 feet, NGVD measured at the WCA-3AVG (3-Station Average of Sites 63, 64, 65) by January 01, 2014. The purpose of this recommendation is to conserve water for later in the dry season in order to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts.	Continued operations include discharges through S-12B, S-12C and S-12D in accordance with WCA-3A Rainfall-Based Management Plan 2,362 cubic feet per second (cfs) target flow. S-333 remains closed due to G-3273 constraint (6.8 feet, NGVD). S-12A, S-343A, S-343B, and S-344 remain closed per ERTP for protection of Cape Sable seaside sparrow (CSSS). ERTP Column 1 operations continue.	Inflow: S-11s = 228 cfs (daily average) Outflow: S-12s= 1,690 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Fully Closed S-343B = Fully Closed S-344= Fully Closed	Reduce discharges from WCA-3A in an effort to decrease recession rate to conserve water for ecological purposes within WCA-3A.	Releases at S-12B, S-12C and S-12D to meet WCA-3A Rainfall-Based Management Plan target flow. S-333 remains closed due to the G-3273 constraint. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.
December 12, 2013	Water management efforts should focus on reducing releases from WCA-3A in an effort to retain water in WCA-3A to the maximum extent practicable to achieve the desired elevation of 10.4 feet, NGVD measured at the WCA-3AVG by January 01, 2014. The purpose of this recommendation is to conserve water for later in dry season in order to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts.	Continued operations include discharges through S-12B, S-12C and S-12D in accordance with WCA-3A Rainfall-Based Management Plan 2,362 cubic feet per second (cfs) target flow. S-333 remains closed due to G-3273 constraint (6.8 feet, NGVD). S-12A, S-343A, S-343B, and S-344 remain closed per ERTP for protection of Cape Sable seaside sparrow (CSSS). ERTP Column 1 operations continue.	Inflow: S-11s = 230 cfs (daily average) S-8= 75 cfs Outflow: S-12s= 971 cfs (daily average) S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	Reduce discharges from WCA-3A in an effort to decrease recession rate to conserve water for ecological purposes within WCA-3A.	Releases at S-12D to meet WCA-3A Rainfall-Based Management Plan target flow. S-333 remains closed due to the G-3273 constraint. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations. Note: S-12B was closed December 13, 2013, 18 days prior to the ERTP mandated closure date of January 1 for protection of the CSSS. Also note that S-12C closed December 13, 2013.
January 16, 2014	Water management efforts should focus on reducing discharges from WCA-3A in an effort to decrease the rate of recession to try to attain a recession rate less than or equal to 0.06 ft per week as measured at the WCA-3AVG through February 15, 2014. The purpose of this recommendation is to conserve water for later in dry season in order to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts.	Continued operations include discharges through S-333 in accordance with WCA-3A Rainfall-Based Management Plan 43 cfs target flow. S-12A, S-12B, S-343A, S-343B, and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows into WCA-3A from STA-3/4 to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 219 cfs (daily average) S-8/ S-150 = 150 cfs (daily average) Outflow: S-12s= 0 cfs S-333= 46 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	Reduce discharges from WCA-3A in an effort to decrease recession rate to conserve water for ecological purposes within WCA-3A.	No Releases at S-12s and small releases at S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.
February 6, 2014	Water management efforts should focus on reducing discharges from WCA-3A in an effort to decrease the rate of recession to try to attain a recession rate less than or equal to 0.06 ft per week as measured at the WCA-3AVG through February 15, 2014. The purpose of this recommendation is to conserve water for later in dry season in order to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts.	Continued operations include discharges through S-333 in accordance with WCA-3A Rainfall-Based Management Plan 128 cfs target flow. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 200 cfs (daily average) G-404 = 200 cfs (approximately) Outflow: S-12s= 0 cfs S-333= 140 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	Reduce discharges from WCA-3A in an effort to decrease recession rate to conserve water for ecological purposes within WCA-3A.	No Releases at S-12s but continued releases at S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.

February 27, 2014	Water management efforts should focus on increasing discharges from southern WCA-3A in an effort to increase recession rate of WCA-3A to try to attain a recession between 0.05 and 0.07 feet per week measured at the WCA-3AVG, while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include discharges through S-333 in accordance with WCA-3A Rainfall-Based Management Plan 316 cfs target flow and water level in Zone E1 of the WCA-3A Interim Regulation Schedule. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 1,300 cfs (daily average) G-404 = 200 cfs (approximately) Outflow: S-12D= 433 cfs (daily average) S-333= 630 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To increase releases from southern WCA-3A while in Zone E1 of the WCA-3A Interim Regulation Schedule while hydrating the northwest corner of WCA-3A.	Releases at S-12D and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow and Zone E1 of the WCA-3A Interim Regulation Schedule. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.
March 13, 2014	Water management efforts should focus on continued increased discharges from southern WCA-3A while in Zone E1 of the WCA-3A Interim Regulation Schedule in an effort to increase the recession of WCA-3A to try to attain a recession between 0.07 and 0.10 feet per week measured at the WCA-3AVG, while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include discharges through S-12D and S-333 in accordance with WCA-3A Rainfall-Based Management Plan 287 cfs target flow and water level in Zone E1 of the WCA-3A Interim Regulation Schedule. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 430 cfs (daily average) G-404 = 150 cfs (approximately) Outflow: S-12D= 460 cfs (daily average) S-333= 650 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To increase releases from southern WCA-3A while in Zone E1 of the WCA-3A Interim Regulation Schedule while hydrating the northwest corner of WCA-3A.	Releases at S-12D and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow and Zone E1 of the WCA-3A Interim Regulation Schedule. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.
April 10, 2014	Water management efforts should focus on stopping releases to Northeast Shark River Slough from southern WCA-3A in an effort to maintain the current recession of WCA-3A to try to attain a recession between 0.07 and 0.10 feet per week measured at the WCA-3AVG, while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include no discharges through the S-12s and S-333 in accordance with WCA-3A Rainfall-Based Management Plan 0 cfs target flow. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 as practicable to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 0 cfs Outflow: S-12s= 0 cfs S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To minimize releases from WCA-3A.	No releases are being made through the S-12s or S-333 in accordance with WCA-3A Rainfall-Based Management Plan target flow 0 cfs target. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.
May 1, 2014	Water management efforts should focus on maintaining no releases to Northeast Shark River Slough from southern WCA-3A in an effort to slow the recession of WCA-3A to try to attain a recession rate between 0.05 and 0.08 feet per week as measured at the WCA-3AVG while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include no discharges through the S-12s in accordance with WCA-3A Rainfall-Based Management Plan 0 cfs target flow. However, South Florida Water Management District is making water supply releases through S-333 and S-334. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 as practicable to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 0 cfs G-404 = 200 cfs (approximately) Outflow: S-12s= 0 cfs S-333= 76 cfs S-334= 81 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To minimize releases from WCA-3A.	No releases are being made through the S-12s in accordance with WCA-3A Rainfall-Based Management Plan 0 cfs target flow. However, South Florida Water Management District is making water supply releases through S-333 and S-334. ERTP Column 1 operations.

May 21, 2014	Water management efforts should focus on maintaining no releases to Northeast Shark River Slough from southern WCA-3A in an effort to slow the recession of WCA-3A to try to attain a recession rate between 0.07 and 0.12 feet per week as measured at the WCA-3AVG, while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include no discharges through the S-12s in accordance with WCA-3A Rainfall-Based Management Plan 0 cfs target flow. However, South Florida Water Management District is making water supply releases through S-333 and S-334. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 as practicable to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 0 cfs G-404 = 200 cfs (approximately) Outflow: S-12s= 0 cfs S-333= 346 cfs (daily average) S-334= 340 cfs (daily average) S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To minimize releases from WCA-3A.	No releases are being made through the S-12s in accordance with WCA-3A Rainfall-Based Management Plan 0 cfs target flow. However, South Florida Water Management District is making water supply releases through S-333 and S-334. ERTP Column 1 operations.
June 12, 2014	Water management efforts should focus on maintaining no releases to Northeast Shark River Slough from southern WCA-3A) in an effort to slow the recession of WCA-3A to try to attain a recession between 0.05 and 0.07 feet per week measured at the WCA-3AVG, while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include no discharges through the S-12s in accordance with WCA-3A Rainfall-Based Management Plan 0 cfs target flow. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 as practicable to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 0 cfs G-404 = 0 cfs Outflow: S-12s= 0 cfs S-333= 0 cfs S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To minimize releases from WCA-3A.	No releases are being made through the S-12s or S-333 in accordance with the Rainfall-Based Management Plan 0 cfs target. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.
July 10, 2014	Water management efforts should focus on making releases to Northeast Shark River Slough from southern WCA-3A in an effort to slow the ascension of WCA-3A to try to attain an ascension around 0.09 feet per week measured at the WCA-3AVG to ascend to 10.5 feet, NGVD by October 01, 2014 while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts.	Continued operations include no discharges through the S-12s in accordance with WCA-3A Rainfall-Based Management Plan 83 cfs target flow and Part C of the WCA-3A Interim Regulation Schedule. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 as practicable to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 0 cfs G-404 = 200 cfs (approximately) Outflow: S-12C & D= 890 cfs (daily average) S-333= 960 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To maximize releases from WCA-3A.	Releases at S-12C, S-12D and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow and in accordance to Part C of the WCA-3A Interim Regulation Schedule. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.
July 31, 2014	Water management efforts should focus on maintaining no releases to Northeast Shark River Slough from southern WCA-3A in an effort to maintain a moderate ascension of WCA-3A to ascend to 10.5 feet, NGVD by October 01, 2014 as measured at the WCA-3AVG, while hydrating the NW corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include no discharges through the S-12s in accordance with WCA-3A Rainfall-Based Management Plan 0 cfs target flow. S-12A, S-12B, S-343A, S-343B and S-344 remain closed per ERTP. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 as practicable to maintain WCA-3A water levels and recession rates.	Inflow: S-11s = 1560 cfs (daily average) G-404 = 0 cfs Outflow: S-12D= 400 cfs (daily average) S-333= 427 cfs (daily average) S-334= 0 cfs S-151= 0 cfs S-31= 0 cfs S-343A = Closed S-343B = Closed S-344= Closed	To minimize releases from WCA-3A.	Reducing releases at S-12D and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.

August 28, 2014	Water management efforts should focus on maximizing releases to Northeast Shark River Slough from southern WCA-3A in an effort to maintain a moderate ascension of WCA-3A to ascend to 10.5 feet, NGVD by October 01, 2014 as measured at the WCA-3AVG, while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include maximum practicable discharges through S-12A, S-12B, S-12C, S-12D and S-333 to Northeast Shark River Slough in accordance with WCA-3A Rainfall-Based Management Plan target flow of maximum discharges. S-343A and S-343B, and S-344 are fully opened per ERTP. S-151/S-31 discharges are being made into WCA-3B and to tide. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 as practicable.	Inflow: S-11s = 1,670 cfs (daily average) S-8/S-150: 1,070 cfs (daily average) Outflow: S-12s= 1,160 cfs (daily average) S-333: 810 cfs (daily average) S-334: 0 cfs S-151= 400 cfs (daily average) S-31= 75 cfs (daily average) S-343A = Opened Fully S-343B = Opened Fully S-344= Opened Fully	To maximize releases from WCA-3A.	Maximum Releases at S-12s and S-333 to meet WCA-3A Rainfall-Based Management Plan target flow. S-151/S-31 discharges are being made into WCA-3B and to tide. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.
September 25, 2014	Water management efforts should focus on maximizing releases to Northeast Shark River Slough from southern WCA-3A in an effort to maintain the WCA-3A water level near 10.5 feet, NGVD by October 01, 2014 as measured at the WCA-3AVG, while hydrating the northwest corner of WCA-3A. The purpose of this recommendation is to provide reasonable conditions for wildlife, threatened and endangered species, their prey and their habitats and prevent negative ecological impacts, including minimizing the risk of muck fires as the dry season progresses.	Continued operations include maximum practicable discharges through S-12A, S-12B, S-12C, S-12D to Northeast Shark River Slough in accordance with WCA-3A Rainfall-Based Management Plan target flow of maximum discharges. S-333 is closed due to G-3273 constraint (6.8 feet, NGVD). S-343A and S-343B, and S-344 are fully opened per ERTP. S-151/S-31 discharges are being made into WCA-3B and to tide. ERTP Column 1 operations continue. Operations also include inflows from STA-3/4 as practicable.	Inflow: S-11s = 2,370 cfs (daily average) S-8/S-150: 1,080 cfs (daily average) Outflow: S-12s= 1,720 cfs (daily average) S-333: 0 cfs S-334: 0 cfs (daily average) S-151= 500 cfs (daily average) S-31= 30 cfs (daily average) S-343A = Opened Fully S-343B = Opened Fully S-344= Opened Fully	To maximize releases from WCA-3A.	Maximum Releases at S-12s to meet WCA-3A Rainfall-Based Management Plan target flow. S-333 is closed per the G-3273 constraint. S-151/S-31 discharges are being made into WCA-3B and to tide. Releases may be made at S-333 and S-334 for water supply. ERTP Column 1 operations.

III. Incidental Take Statement Analysis: Everglade Snail Kite

A. Prolonged High Stages

1. ***Reinitiation Trigger****: If water levels rise above 10.5 feet, NGVD at Gauge 3AS3W1 for 60 consecutive days in 2 consecutive years as a result of ERTP operations (or the period in which IOP remains in place), incidental take will be exceeded.*

Note: If water levels rise above 10.5 feet, NGVD at the 3AS3W1 gauge for 60 consecutive days in any single year, USACE will conduct a retrospective review to determine potential cause(s) of the high water and share this information with FWS.

Table 2. Total annual precipitation and the number of days Gauge 3AS3W1 was greater than 10.5 feet, NGVD for Water Year (WY) 2011 through WY 2014 (October 1– September 30).

Water Year	Total Precipitation (inches; EDEN-NEXRAD)	Gauge 3AS3W1 High Water Peak Stage (feet, NGVD)	Number of Days Gauge 3AS3W1 > 10.5 feet, NGVD
2011	42.33	10.19	0
2012	59.55	10.83	41
2013	55.75	11.02	70
2014	23.21*	10.77	13

*: Rainfall data only available through June 30, 2014.

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

Conclusion: *As indicated in Table 2 and Figure 1, during WY14 water levels at Gauge 3AS3W1 rose above 10.5 feet, NGVD for a period of 13 consecutive days between October 1, 2013 and October 13, 2013. As such there is no requirement for USACE to conduct a retrospective review of water management actions related to this ITS trigger. USACE has concluded that water levels above 10.5 feet NGVD were the result of natural rainfall conditions and not a result of operations prescribed by 2012 ERTP. In addition, USACE utilized all available means of removing water from WCA-3A. Reinitiation is not required at this time.*

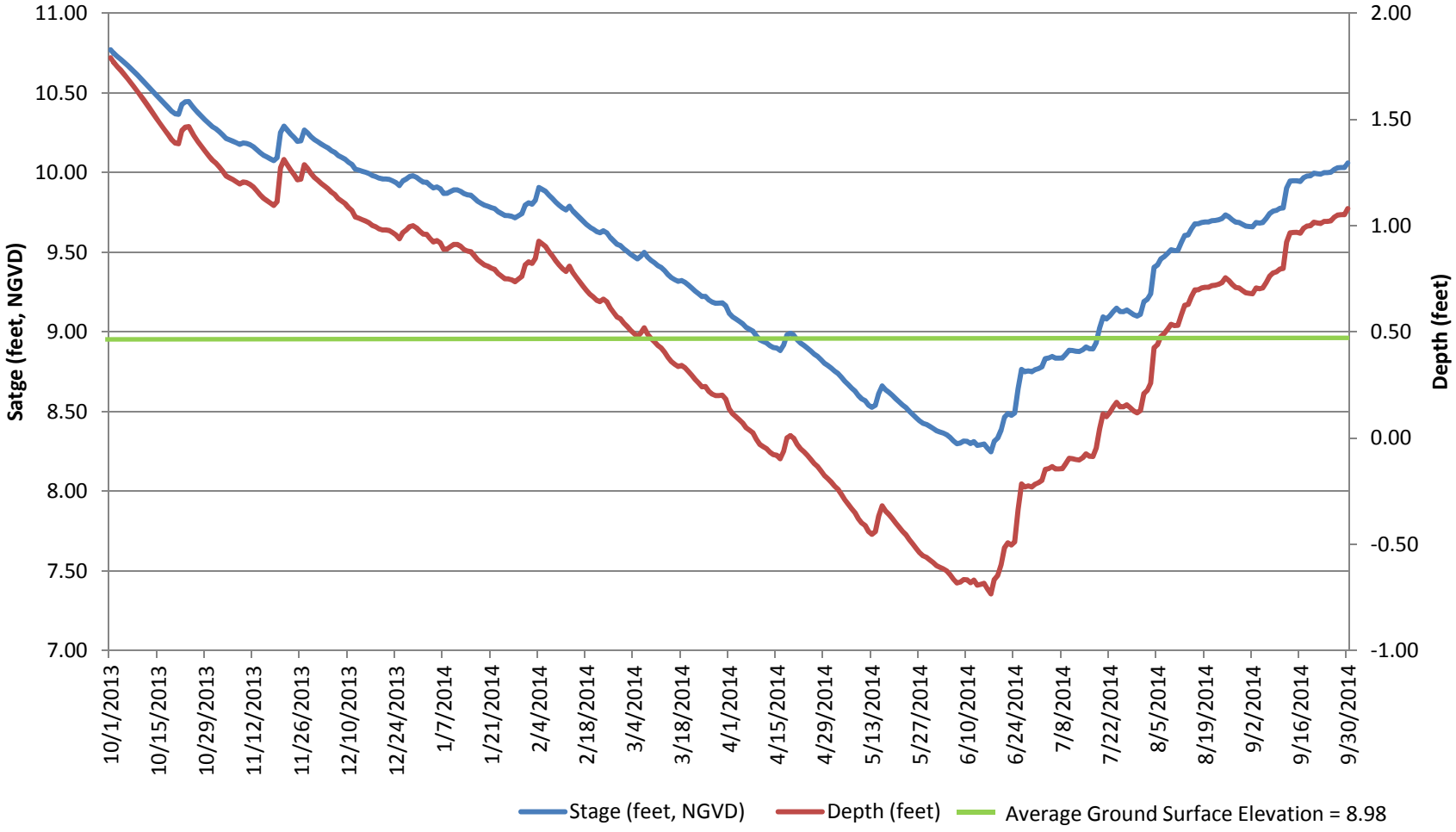

Figure 1. Gauge 3AS3W1 Stage (feet, NGVD) from October 1, 2013 through September 30, 2014.

B. High Water in Dry Season

1. **Reinitiation Trigger:** *Incidental Take will be exceeded when maximum water levels exceed 9.2 feet, NGVD at Gauge 3AS3W1 on or after April 15 in two consecutive years as a result of ERTP operations, or during the period when IOP remains in place.*

Note: If water levels exceed this threshold in any single year, USACE will conduct a retrospective review to determine the potential causes(s) of high water and will coordinate with FWS to apply adaptive management in an attempt to avoid high water conditions during future dry seasons.

Table 3. Number of days Gauge 3AS3W1 was greater than 9.2 feet, NGVD between April 15 and May 31, 2014.

Water Year	Total Precipitation (inches; EDEN-NEXRAD; January 1-May 31)	Gauge 3AS3W1 High Water Peak Stage (feet, NGVD)	Number of Days Gauge 3AS3W1 > 9.2 feet, NGVD (April 15-May 31)
2011	8.88	8.49	0
2012	19.36	9.71	18
2013	14.42	9.52	30
2014	9.64	8.99	0

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

4. **Conclusion**: *As indicated in Table 3 and Figure 2, during WY14 water levels at Gauge 3AS3W1 did not rise above 9.2 feet, NGVD during the period between April 15 and May 31, 2014. As such there is no requirement for USACE to reinitiate consultation or conduct a retrospective review of water management actions related to this ITS trigger.*

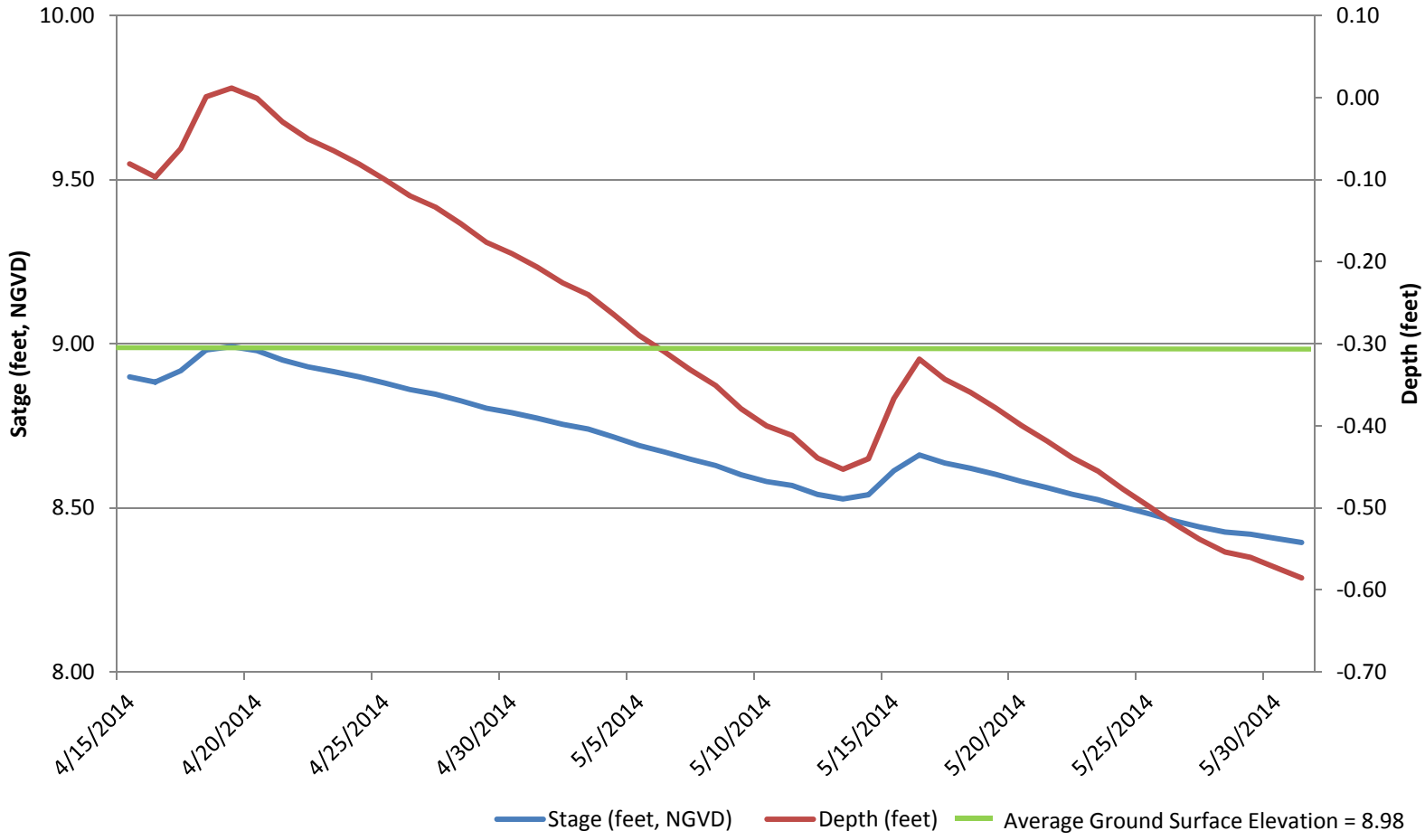

Figure 2. Gauge 3AS3W1 Stage (feet, NGVD) from April 15 through May 31, 2014.

C. Rapid Recession Rates and Amplitude

1. **Reinitiation Trigger:** *Incidental Take will be exceeded if stages in WCA-3A, as measured by the gauge(s) closest to active kite nesting (assessed by FWS as described within the ERTP BO), recede by (1) more than 1.7 feet from January 1 through May 31 or the onset of the wet season, whichever is sooner, or (2) more than 0.34 feet within any 30-day period, in 2 consecutive years as a result of ERTP operations, or the period in which IOP remains in place.*

Note: If either of these amplitudes is exceeded in any single year, USACE will conduct a retrospective review to determine the potential cause(s) of the rapid recession and how future operations can avoid exceeding these thresholds.

Table 4. Dry Season Amplitude: WCA-3A January 1 to May 31 stage difference as measured at the specified gauges*.

Water Year	WCA-3A Stage Difference (feet; January 1 to May 31)			
	3AS3W1	W2	3A-28	3A-4
2011	1.58	1.35	1.81	1.98
2012	0.65	0.99	0.74	0.59
2013	0.56	0.76	0.77	0.78
2014	1.55	1.11	1.52	1.48

* Note: FWS has determined that all gauges listed are relevant to snail kite nesting during WY11. FWS has determined that Gauge W2 is relevant to snail kite nesting during WY12. FWS has determined that Gauges 3AS3W1, W-2 and 3A-4 are relevant to snail kite nesting during WY13. USACE requested via email on October 27, 2014 the gauges relevant to snail kite nesting during WY14. No response was received and thus, USACE has included all gauges within Table 4.

2. **ITS Exceeded:** *Yes*

3. **Reinitiation Required:** *No*

Table 5. Dry Season Amplitude: WCA-3A January 1 to May 31, 2014, 30-day rolling stage difference as measured at the specified gauges.

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
1/1/2014	9.94		9.97		9.87		10.24	
1/2/2014	9.94		9.96		9.86		10.24	
1/3/2014	9.92		9.95		9.84		10.23	
1/4/2014	9.90		9.94		9.84		10.20	
1/5/2014	9.91		9.92		9.84		10.20	
1/6/2014	9.90		9.91		9.83		10.20	
1/7/2014	9.87		9.89		9.80		10.17	
1/8/2014	9.87		9.88		9.82		10.15	
1/9/2014	9.88		9.87		9.83		10.16	
1/10/2014	9.89		9.85		9.83		10.18	
1/11/2014	9.89		9.84		9.82		10.18	
1/12/2014	9.88		9.83		9.80		10.17	
1/13/2014	9.87		9.82		9.80		10.16	
1/14/2014	9.86		9.83		9.80		10.16	
1/15/2014	9.86		9.84		9.79		10.16	
1/16/2014	9.84		9.84		9.78		10.15	
1/17/2014	9.82		9.84		9.77		10.12	
1/18/2014	9.81		9.84		9.76		10.11	
1/19/2014	9.80		9.84		9.74		10.10	
1/20/2014	9.79		9.84		9.73		10.09	
1/21/2014	9.78		9.83		9.71		10.09	
1/22/2014	9.77		9.82		9.70		10.07	
1/23/2014	9.76		9.81		9.69		10.05	
1/24/2014	9.74		9.80		9.69		10.04	
1/25/2014	9.73		9.80		9.69		10.03	
1/26/2014	9.73		9.82		9.68		10.03	
1/27/2014	9.73		9.84		9.67		10.03	
1/28/2014	9.72		9.85		9.65		10.02	
1/29/2014	9.73		9.85		9.66		10.02	
1/30/2014	9.74	0.20	9.84	0.13	9.68	0.19	10.01	0.23
1/31/2014	9.80	0.14	9.83	0.13	9.76	0.10	10.08	0.16
2/1/2014	9.81	0.11	9.83	0.11	9.76	0.09	10.09	0.14
2/2/2014	9.80	0.10	9.82	0.11	9.74	0.10	10.09	0.11
2/3/2014	9.83	0.08	9.80	0.12	9.77	0.06	10.09	0.11
2/4/2014	9.91	-0.01	9.79	0.11	9.83	0.00	10.09	0.11
2/5/2014	9.89	-0.03	9.80	0.09	9.79	0.02	10.10	0.07
2/6/2014	9.88	-0.01	9.78	0.09	9.77	0.04	10.12	0.04
2/7/2014	9.86	0.02	9.76	0.10	9.76	0.07	10.11	0.05
2/8/2014	9.84	0.05	9.78	0.07	9.75	0.08	10.10	0.08
2/9/2014	9.82	0.08	9.79	0.05	9.72	0.10	10.09	0.09
2/10/2014	9.79	0.09	9.79	0.04	9.70	0.10	10.07	0.10
2/11/2014	9.78	0.09	9.78	0.04	9.68	0.12	10.06	0.10
2/12/2014	9.77	0.10	9.76	0.07	9.66	0.14	10.05	0.11
2/13/2014	9.79	0.07	9.76	0.08	9.68	0.11	10.06	0.10
2/14/2014	9.76	0.08	9.75	0.09	9.66	0.12	10.04	0.10
2/15/2014	9.74	0.08	9.74	0.10	9.64	0.13	10.04	0.08
2/16/2014	9.72	0.09	9.73	0.11	9.61	0.15	10.01	0.09
2/17/2014	9.70	0.10	9.72	0.12	9.59	0.16	10.00	0.10
2/18/2014	9.68	0.11	9.71	0.13	9.56	0.16	10.00	0.09
2/19/2014	9.66	0.12	9.70	0.14	9.55	0.17	9.99	0.10
2/20/2014	9.65	0.13	9.69	0.14	9.53	0.17	9.98	0.09
2/21/2014	9.63	0.13	9.67	0.14	9.51	0.18	9.98	0.07
2/22/2014	9.62	0.12	9.66	0.14	9.49	0.20	9.97	0.06
2/23/2014	9.63	0.10	9.65	0.15	9.49	0.20	9.96	0.07
2/24/2014	9.62	0.11	9.65	0.18	9.48	0.20	9.95	0.08
2/25/2014	9.59	0.13	9.65	0.19	9.46	0.21	9.94	0.09
2/26/2014	9.57	0.14	9.63	0.22	9.45	0.20	9.92	0.10
2/27/2014	9.55	0.18	9.62	0.23	9.44	0.21	9.91	0.11
2/28/2014	9.54	0.20	9.61	0.23	9.44	0.24	9.90	0.11
3/1/2014	9.52	0.27	9.62	0.21	9.41	0.35	9.89	0.19
3/2/2014	9.51	0.30	9.65	0.19	9.40	0.36	9.87	0.22
3/3/2014	9.49	0.31	9.71	0.11	9.38	0.36	9.87	0.22
3/4/2014	9.47	0.35	9.72	0.08	9.37	0.41	9.85	0.24
3/5/2014	9.46	0.45	9.71	0.09	9.35	0.48	9.84	0.25
3/6/2014	9.48	0.42	9.72	0.08	9.36	0.43	9.83	0.26
3/7/2014	9.50	0.38	9.77	0.02	9.38	0.40	9.84	0.27

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
3/8/2014	9.47	0.39	9.76	0.00	9.35	0.42	9.83	0.29
3/9/2014	9.45	0.39	9.75	0.03	9.33	0.41	9.81	0.29
3/10/2014	9.43	0.38	9.73	0.06	9.32	0.40	9.81	0.28
3/11/2014	9.42	0.38	9.72	0.07	9.30	0.41	9.79	0.28
3/12/2014	9.41	0.37	9.69	0.08	9.28	0.40	9.78	0.28
3/13/2014	9.38	0.38	9.68	0.09	9.26	0.40	9.75	0.30
3/14/2014	9.36	0.43	9.66	0.10	9.23	0.45	9.71	0.35
3/15/2014	9.34	0.42	9.64	0.11	9.22	0.44	9.69	0.35
3/16/2014	9.33	0.41	9.66	0.08	9.20	0.44	9.69	0.35
3/17/2014	9.32	0.40	9.63	0.10	9.19	0.42	9.69	0.33
3/18/2014	9.32	0.37	9.61	0.12	9.19	0.39	9.69	0.32
3/19/2014	9.31	0.36	9.58	0.13	9.19	0.37	9.68	0.32
3/20/2014	9.29	0.36	9.56	0.14	9.17	0.38	9.67	0.33
3/21/2014	9.28	0.37	9.54	0.15	9.15	0.38	9.65	0.34
3/22/2014	9.26	0.37	9.52	0.16	9.13	0.38	9.63	0.35
3/23/2014	9.24	0.38	9.50	0.16	9.11	0.38	9.61	0.37
3/24/2014	9.22	0.41	9.48	0.17	9.09	0.39	9.58	0.38
3/25/2014	9.22	0.40	9.46	0.19	9.10	0.38	9.58	0.37
3/26/2014	9.20	0.39	9.45	0.20	9.08	0.38	9.55	0.39
3/27/2014	9.19	0.38	9.44	0.20	9.06	0.39	9.54	0.38
3/28/2014	9.18	0.37	9.42	0.20	9.05	0.39	9.53	0.38
3/29/2014	9.18	0.36	9.40	0.20	9.05	0.39	9.52	0.38
3/30/2014	9.18	0.34	9.39	0.23	9.05	0.36	9.52	0.37
3/31/2014	9.16	0.34	9.38	0.26	9.03	0.36	9.51	0.36
4/1/2014	9.12	0.37	9.37	0.35	9.02	0.36	9.43	0.44
4/2/2014	9.10	0.38	9.35	0.37	9.01	0.36	9.42	0.44
4/3/2014	9.08	0.38	9.33	0.37	9.00	0.35	9.39	0.45
4/4/2014	9.07	0.41	9.32	0.40	8.99	0.37	9.38	0.46
4/5/2014	9.05	0.45	9.30	0.46	8.98	0.40	9.36	0.48
4/6/2014	9.03	0.44	9.31	0.45	8.98	0.37	9.35	0.48
4/7/2014	9.02	0.43	9.32	0.43	8.95	0.38	9.34	0.48
4/8/2014	9.01	0.43	9.29	0.44	8.94	0.38	9.32	0.49
4/9/2014	8.97	0.44	9.28	0.44	8.93	0.37	9.29	0.50
4/10/2014	8.95	0.45	9.26	0.43	8.90	0.37	9.27	0.51
4/11/2014	8.94	0.44	9.24	0.43	8.89	0.37	9.26	0.49
4/12/2014	8.93	0.43	9.23	0.43	8.88	0.35	9.24	0.48
4/13/2014	8.91	0.43	9.21	0.43	8.86	0.36	9.22	0.48
4/14/2014	8.90	0.43	9.18	0.48	8.85	0.36	9.21	0.48
4/15/2014	8.90	0.42	9.17	0.46	8.84	0.35	9.22	0.47
4/16/2014	8.88	0.44	9.16	0.45	8.83	0.36	9.22	0.46
4/17/2014	8.92	0.39	9.14	0.44	8.85	0.34	9.22	0.46
4/18/2014	8.98	0.31	9.14	0.41	8.90	0.27	9.23	0.44
4/19/2014	8.99	0.28	9.13	0.41	8.92	0.23	9.22	0.43
4/20/2014	8.98	0.28	9.11	0.41	8.91	0.22	9.21	0.42
4/21/2014	8.95	0.29	9.09	0.41	8.89	0.22	9.19	0.42
4/22/2014	8.93	0.29	9.08	0.40	8.87	0.22	9.18	0.40
4/23/2014	8.92	0.31	9.06	0.40	8.85	0.25	9.16	0.42
4/24/2014	8.90	0.30	9.05	0.40	8.83	0.26	9.14	0.41
4/25/2014	8.88	0.31	9.06	0.38	8.81	0.25	9.13	0.41
4/26/2014	8.86	0.32	9.04	0.38	8.79	0.26	9.10	0.43
4/27/2014	8.85	0.33	9.02	0.39	8.76	0.29	9.08	0.44
4/28/2014	8.83	0.36	9.01	0.38	8.74	0.31	9.06	0.46
4/29/2014	8.80	0.36	9.00	0.38	8.72	0.31	9.04	0.47
4/30/2014	8.79	0.33	9.01	0.36	8.70	0.32	9.01	0.42
5/1/2014	8.77	0.32	8.99	0.35	8.68	0.33	9.00	0.42
5/2/2014	8.75	0.33	8.98	0.35	8.67	0.33	9.00	0.39
5/3/2014	8.74	0.33	8.97	0.35	8.66	0.32	8.98	0.40
5/4/2014	8.72	0.34	8.96	0.34	8.67	0.31	8.95	0.41
5/5/2014	8.69	0.34	8.95	0.36	8.66	0.32	8.93	0.42
5/6/2014	8.67	0.35	8.94	0.38	8.64	0.31	8.91	0.42
5/7/2014	8.65	0.36	8.93	0.36	8.62	0.32	8.89	0.42
5/8/2014	8.63	0.35	8.92	0.36	8.59	0.35	8.87	0.42
5/9/2014	8.60	0.35	8.90	0.36	8.56	0.34	8.85	0.43
5/10/2014	8.58	0.36	8.88	0.36	8.54	0.35	8.82	0.44
5/11/2014	8.57	0.36	8.86	0.36	8.52	0.36	8.80	0.44
5/12/2014	8.54	0.37	8.85	0.36	8.50	0.36	8.77	0.45
5/13/2014	8.53	0.38	8.84	0.35	8.48	0.37	8.75	0.46
5/14/2014	8.54	0.36	8.82	0.35	8.48	0.36	8.73	0.49

Date	3AS3W1 (Observed Stage [feet, NGVD])	3AS3W1 (30-day Stage Difference)	W2 (Observed Stage [feet, NGVD])	W2 (30-day Stage Difference)	3A-28 (Observed Stage [feet, NGVD])	3A-28 (30-day Stage Difference)	3A-4 (Observed Stage [feet, NGVD])	3A-4 (30-day Stage Difference)
5/15/2014	8.61	0.27	8.81	0.34	8.54	0.30	8.84	0.38
5/16/2014	8.66	0.26	8.83	0.31	8.61	0.24	8.99	0.23
5/17/2014	8.64	0.34	8.82	0.33	8.59	0.31	8.97	0.26
5/18/2014	8.62	0.37	8.90	0.22	8.56	0.36	8.96	0.26
5/19/2014	8.60	0.38	8.98	0.13	8.54	0.37	8.94	0.26
5/20/2014	8.58	0.37	8.96	0.13	8.51	0.38	8.92	0.27
5/21/2014	8.56	0.37	8.94	0.14	8.49	0.39	8.90	0.27
5/22/2014	8.54	0.37	8.91	0.15	8.47	0.38	8.88	0.28
5/23/2014	8.53	0.37	8.88	0.16	8.45	0.38	8.86	0.28
5/24/2014	8.50	0.38	8.86	0.20	8.43	0.38	8.84	0.29
5/25/2014	8.48	0.38	8.84	0.20	8.41	0.38	8.82	0.28
5/26/2014	8.46	0.39	8.82	0.20	8.39	0.37	8.80	0.28
5/27/2014	8.44	0.38	8.79	0.21	8.37	0.37	8.77	0.29
5/28/2014	8.43	0.38	8.77	0.23	8.35	0.37	8.75	0.29
5/29/2014	8.42	0.37	8.75	0.26	8.36	0.34	8.74	0.27
5/30/2014	8.41	0.37	8.73	0.27	8.37	0.32	8.73	0.27
5/31/2014	8.39	0.36	8.71	0.28	8.35	0.33	8.76	0.24

* Note: Numbers highlighted in yellow indicate recession rates that are greater than preferred (i.e. $\geq$ 0.34 feet) within a 30-day period. Negative numbers represent rising water.

4. ***Conclusion:*** *As indicated in Table 4 of the WY14 ERTP Annual Assessment, the dry season amplitude (stage difference between January 1 and May 31, 2014) was not exceeded. However, the monthly amplitude was exceeded at the gauges listed between March and May 2014. The monthly amplitude was also exceeded in 2013 from February 2 through February 14, 2013 and from March 16 through April 5, 2013. Therefore as required under the ERTP BO, USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession during these periods and how future operations can avoid exceeding these thresholds. The review considered water management operations including releases through the WCA-3A outlet structures, evapotranspiration rates and WCA-3A inflows (e.g. rainfall). A spreadsheet analysis was employed to calculate the effect of S-333 water supply releases on WCA-3A stage. Based upon the results of this analysis, the effect of S-333 releases on WCA-3A stage during WY13 equates to an approximate total of 0.72 inches (0.06 feet). Figure 3 of the WY13 ERTP Annual Assessment illustrates precipitation amounts along with S-333 and S-12 releases throughout the period between January 1 and May 31, 2013. As a result of this retrospective review, USACE determined in the WY13 ERTP Annual Assessment that the rapid recession rates experienced throughout this period were not a direct result of water management actions, but rather due to dry season evapotranspiration rates associated with well below average rainfall (-5.13 inches) for the first 3 months of 2013.*

Since the monthly amplitude was also exceeded in WY14 between March and May, 2014, the Corps conducted the same retrospective review to determine the potential cause(s) of the rapid recession during these periods and how future operations can avoid exceeding these thresholds. The USACE retrospective review consisted of the same methodology employed for WY11, WY12 and WY13. Based upon the results of this analysis, the effect of S-333 releases on WCA-3A stage during WY14 equates to an approximate total of 1.94 inches (0.16 feet). Table 2 also illustrates PSC recommendations and USACE water management operations in response to the recommendations.

Figure 3 illustrates precipitation amounts along with S-333, S-334 and S-12 releases throughout the period between January 1 and May 31, 2014. Since the majority of WCA-3A outlet structures (i.e. S-12A,B,C, S343A/B and S-344) were closed during this period, S-12D was opened as needed per the WCA-3A Rainfall-Based Management Plan, S-333/S-334 were opened as needed per the WCA-3A Rainfall-Based Management Plan as well as to meet Lower East Coast water supply demands (as permitted by WCA-3A Interim Regulation Schedule), and rapid recession rates were attributed to dry season evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future. In conclusion, the Corps has determined that the rapid recession rates were not a direct result of ERTP operations and therefore reinitiation is not required.

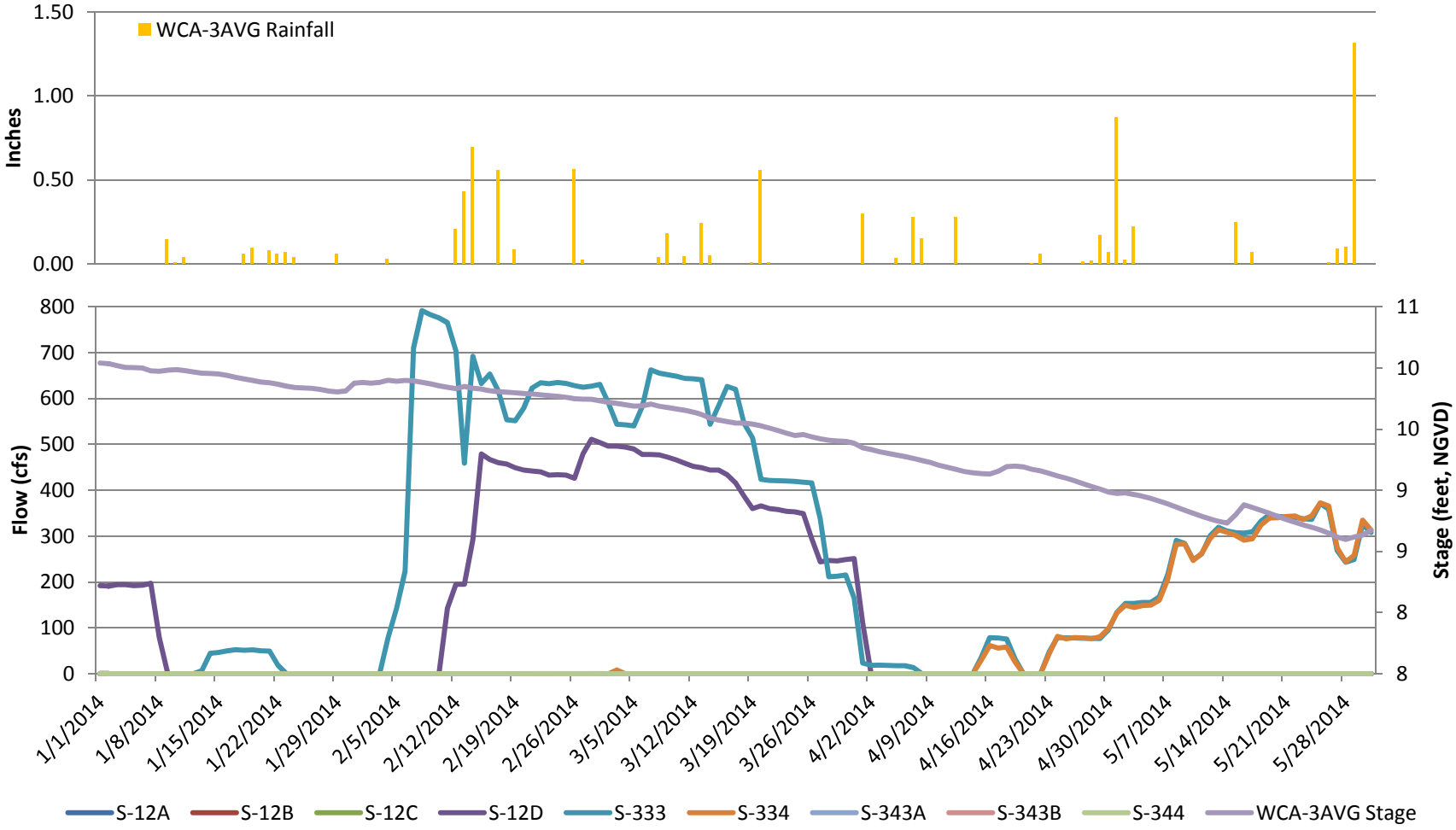

Figure 3. WCA-3AVG Stage (feet, NGVD), WCA-3AVG rainfall (inches) and WCA-3A outflow (January 1 through May 31, 2014)

IV. Incidental Take Statement Analysis: Wood Stork

A. Breeding Season Foraging Depths (Revised March 2, 2012, ERTP BO Amendment)

1. **Reinitiation Trigger:** *Incidental Take will be exceeded if operations from implementing ERTP, or the interim IOP period, results in a water depth greater than 16 inches (41 centimeters) from March 1 through May 31 throughout WCA-3A for two consecutive years as measured by the 3-gauge average (based upon a ground surface elevation of 8.34 feet NGVD) at gauges 3A-3, 3A-4 and 3A-28.*

2. **ITS Exceeded:** *No*

3. **Reinitiation Required:** *No*

Table 6. Number of days water depth exceeded 16 inches (41 centimeters) at the WCA-3AVG (3-gauge average) between March 1 and May 31, 2014.

Month	2014: Precipitation (inches; EDEN-NEXRAD)	2014: Number of Days Water Depth Exceeded 16 inches (41 centimeters)
March	1.61	4
April	1.46	0
May	2.74	0
Total	5.81	4

Figure 4. WCA-3AVG Stage (feet, NGVD) and water depth (inches) between March 1 and May 31, 2014.

*4. **Conclusion**: As shown in Table 6 and Figure 4, water depths at WCA-3AVG exceeded 16 inches for a period of 4 days (March 1- March 4, 2014) during March through May 2014. However, during WY13, water depths at WCA-3AVG did not exceed 16 inches during this period (Refer to WY13 ERTP Annual Assessment). Since the reinitiation trigger is based upon two consecutive years in which water depths exceed this depth, USACE has concluded that reinitiation of consultation based upon this trigger is not required at this time.*

V. Incidental Take Statement Analysis: Cape Sable Seaside Sparrow

A. Sparrow Population

*1. **Reinitiation Trigger**: If the annual CSSS population estimate falls below 2,915 sparrows [Mean population estimate 2001-2009 = 3,145 ± 230]), reinitiation of consultation must occur.*

Table 7. Cape Sable seaside sparrow bird count and population estimates by year as recorded by the Everglades National Park range-wide survey.

Population/ Year	CSSS-A		CSSS-B		CSSS-C		CSSS-D		CSSS-E		CSSS-F		Total	
	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST	BC	EST
2001	8	128	133	2,128	6	96	2	32	53	848	2	32	204	3,264
2002	6	96	119	1,904	7	112	0	0	36	576	1	16	169	2,704
2003	8	128	148	2,368	6	96	0	0	37	592	2	32	201	3,216
2004	1	16	174	2,784	8	128	0	0	40	640	1	16	224	3,584
2005	5	80	142	2,272	5	80	3	48	36	576	2	32	193	3,088
2006	7	112	130	2,080	10	160	0	0	44	704	2	32	193	3,088
2007	4	64	157	2,512	3	48	0	0	35	560	0	0	199	3,184
2008	7	112	NS	NS	3	48	1	16	23	368	0	0	34	544*
2009	6	96	NS	NS	3	48	2	32	27	432	0	0	38	608*
2010	8	128	119	1904	2	32	4	64	57	912	1	16	191	3,056
2011	11	176	NS	NS	11	176	1	16	37	592	2	32	62	992^
2012	21	336	NS	NS	6	96	14	224	46	736	4	64	91	1,456^
2013	18	288	112	1792	8	128	1	16	45	720	1	16	185	2,960
2014	4	64	114	1824	7	112	2	32	42	672	1	16	170	2720

BC Bird Count
EST Estimate
NS Not Surveyed

* These numbers do not reflect a significant decline in CSSS population. CSSS-B, the largest and most stable subpopulation, was not surveyed in 2008 or 2009. Adding the 2007 CSSS-B population estimate of 2,512 birds to those of the other subpopulations, the estimated total CSSS population size is 3,056 and 3,120 birds for 2008 and 2009, respectively.

^ These numbers do not reflect a significant decline in CSSS population. CSSS-B, the largest and most stable subpopulation, was not surveyed in 2011 or 2012. Adding the 2010 CSSS-B population estimate of 1,904 birds to those of the other subpopulations, the estimated total CSSS population size is 2,896 and 3,360 birds for 2011 and 2012, respectively.

2. ***ITS Exceeded****: Yes*

3. ***Reinitiation Required:*** *Yes*

4. ***Conclusion:*** *The 2014 Everglades National Park range-wide survey revealed a population estimate of approximately 2,720 birds. As this number is lower than the reinitiation trigger of 2,915 birds, the USACE has concluded that reinitiation of consultation based upon this trigger is required at this time. In addition to the reinitiation request, USACE has also completed a retrospective review of ERTP operations during the 2013 nesting season as operations during this period would have the potential for the greatest impact on population estimates for the following (i.e. 2014) breeding season. According to the 2014 CSSS survey, only 4 singing males were encountered within CSSS-A as compared with 18 singing males in 2013.*

During the 2013 CSSS nesting season, S-12A/B, S-343A/B and S-334 were closed as per their individual requirements in the 2012 ERTP (Figure 5). ERTP was designed to protect the CSSS to the maximum extent possible through water management operations, while providing for the needs of multiple species within the greater Everglades. Implementation of ERTP resulted in continuation of 2006 IOP closure periods for the aforementioned structures. The purpose of closure periods was to provide an improved opportunity for nesting within CSSS-A by maintaining water levels below ground level for a minimum of 60 consecutive days between March 1 and July 15, corresponding to the CSSS breeding season. ERTP Operations were implemented in October 2012.

During WY13, the S-12A, S-343A/B and S-344 structures were closed November 1, 2012 in accordance with 2012 ERTP. The S-12B structure closed December 26, 2013, in accordance with the WCA-3A Interim Regulation Schedule, 6 days prior to its scheduled closure date of January 1, 2013. Although S-12C does not have any mandated closure periods for protection of CSSS under ERTP, this structure closed January 12, 2013 in accordance with the WCA-3A Rainfall-Based Management Plan and remained closed until May 6, 2013 (Figure 5). Stage data from NP-205 indicate that water was below ground surface level as early as February 4, 2013 and remained below ground surface elevation until April 23, 2013, a period of 78 days. Within the FWS-defined CSSS breeding window of March 1 through July 15, a total of 54 days of continuously dry conditions were experienced at NP-205. FWS has asserted that it takes approximately 45 days to complete one brood cycle, however, a greater number of dry days (80-120) could potentially allow multiple broods. Although there is a potential for multiple broods, research has suggested that most successful reproduction occurs prior to June 1 (Baiser et al. 2008; Boulton et al. 2009; Virzi 2009; FWS 2010).

During the 2014 CSSS nesting season, S-12A/B, S-343A/B and S-334 were closed as per their individual requirements in the 2012 ERTP (Figure 5). During WY14, the S-12B structure closed on December 13, 2013, 18 days prior to the mandated ERTP closure date of January 1, 2014. The structure was closed based upon WCA-3A Rainfall-Based Management Plan. Although S-12C does not have any mandated closure periods for protection of CSSS under ERTP, this structure also closed December 13, 2013 in accordance with the WCA-3A Rainfall-Based Management Plan. Stage data from NP-205 indicate that water was below ground surface level as early as March 4, 2014, however, there were fifteen non-consecutive days during the period between March 4 and April 3, 2014 in which there was a change from groundwater to surface water conditions. During this time period (i.e. March 4 to April 3, 2014) a total of 3.74 inches of rainfall was measured at NP-205 with 1.95 inches measured in a single day (March 25, 2014). The rise in water level equated to between 0.07 to 4.58 centimeters in water depth above ground surface level as measured at NP-205. Water depths experienced during these reversals could potentially affect CSSS-A nesting due to differences in microtopography within CSSS-A habitat, however, CSSS nest heights average approximately 17 cm above ground surface elevation, therefore some nests within CSSS-A may not have been adversely affected by the transition to surface water conditions. If this time frame (March 4-April 3, 2014) is included within the number of days in which conditions were suitable for nesting, a total of 113 days during the CSSS nesting window of March 1 until July 15 would have been achieved during WY14. Since the S-12A/B, S-343A/B and S-344 structures were all closed in accordance with 2012 ERTP and significant rainfall was experienced at NP-205 in March, USACE has concluded that water releases did not contribute to the transition from groundwater to surface water at NP-205 during WY13 or WY14.

During the USACE and FWS consultation for the Central Everglades Planning Project, a number of items were discussed that could facilitate CSSS recovery. During this consultation, FWS noted the need for a better survey methodology and population estimator to more accurately assess CSSS population size (FWS 2014). In addition, in a recent conversation with ENP personnel, it was reported that there were apparent anomalies with CSSS ENP range-wide survey data and in particular, with negative data. Anomalies with the negative data center around the concern that the database does not discern between sites apparently surveyed in which birds were not encountered versus sites that were never surveyed. This anomaly (among others) would affect the accuracy of data reported, thus calling into question the information that was used to establish the Incidental Take trigger within the 2010 ERTP Biological Opinion. ENP has indicated that they are in the process of performing a quality assessment/quality control review of the entire database to ensure accuracy. This effort is expected to be completed within 2015 and will assist to provide a more accurate accounting of survey data.

As shown in Table 7, CSSS-A has not recovered under IOP/ERTP operations, but has remained relatively stable since its implementation in 2002. There are several factors that influence population size including competition, predation and prey availability; recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (i.e. the Allee effect) (Boulton et al. 2009; Virzi et al. 2009). In addition, Everglades National Park has been identified as a hotspot for methylmercury. Methylmercury has been shown to have sub-lethal effects on songbirds resulting in reduced reproductive success (Jackson et al. 2011). CSSS feed on insects, including spiders, and dietary uptake of mercury is a concern. In a recent study with Carolina wrens, Jackson et al. (2011) found a 34% reduction in nesting success on mercury-contaminated sites when compared with reference sites. In addition, their analyses consistently ranked mercury contamination as a leading predictor of nest success, more than any other factor evaluated.

USACE suggests that FWS focus on identifying vital rates that would have the greatest effect on enhancing CSSS populations in order to prepare the subspecies for future restoration under the Comprehensive Everglades Restoration Plan (CERP) that will increase water deliveries within Everglades National Park to restore historic ridge and slough habitats. The USACE is concerned that any supplementary refinements to 2012 ERTP that result in further restrictions of water deliveries to Everglades National Park for protection of CSSS are contrary to CERP restoration goals and would further result in adverse effects to other species within Shark Slough as documented within the 2014 RECOVER System Status Report.

In conclusion, USACE has fully complied with 2012 ERTP CSSS protection measures, however, in accordance with the 2012 ERTP BO, USACE has concluded that reinitiation of consultation based upon this trigger is required at this time. The USACE requests that as a result of the reinitiation process that 1) the CSSS population estimate incidental take trigger be amended to reflect consideration of the new information that has been provided; 2) if the trigger is amended, that the trigger be established subsequent to the Everglades National Park quality assessment/quality control review of the CSSS range-wide survey data; or 3) this incidental take trigger be removed altogether from an amended Biological Opinion.

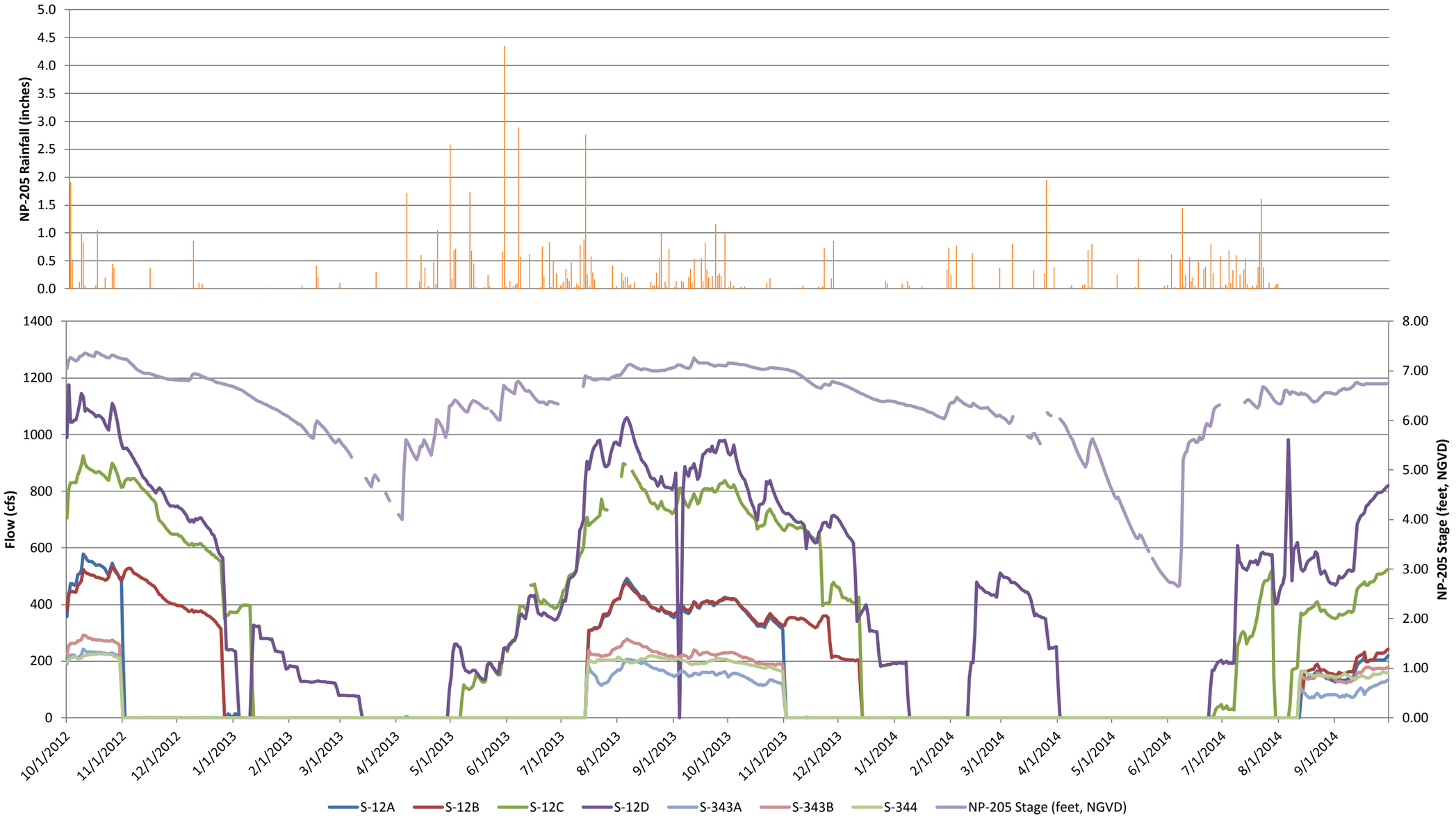

Figure 5. Water control structures S-12A-D, S-343A/B and S-344 Flow (cfs), NP-205 stage (feet, NGVD) and NP-205 rainfall (inches) for WY13 and WY14.

B. Cape Sable Seaside Sparrow Habitat: Eastern Marl Prairies

1. ***Reinitiation Trigger:*** *Operations that raise water levels from groundwater to surface water conditions beyond 0.6 mile of S-332 Detention Areas prior to June 1.*

2. ***ITS Exceeded:*** *No*

3. ***Reinitiation Required:*** *No*

4. ***Conclusions:*** *USACE asked for clarification of the time period for this trigger (November 2010), however, until clarification is provided USACE is assuming that water levels must be below ground surface elevation prior to the FWS-defined CSSS breeding period starting March 1. Thus, USACE is delimiting the period of analysis for this trigger to March 1 through June 1, 2014, until otherwise directed. Previous ERTP Annual Assessment Reports have utilized stages at Gauge MRSHOP B1, MRSHOP C1 and NTS-10 to assess groundwater to surface water conditions for the eastern CSSS subpopulations. However, the MRSHOP B1 and MRSHOP C1 gauges are no longer collecting data due to a reduction in funding levels. As opposed to utilizing the NTS-10 gauge as a single reference point at which to evaluate this reinitiation trigger, USACE utilized the EDEN network to determine whether there was a transition from groundwater to surface water conditions during the time period of interest. This analysis is included within Appendix A. Based upon the EDEN analysis, USACE has determined that surface water conditions were not experienced within the eastern CSSS subpopulations and therefore, reinitiation is not required at this time.*

C. Cape Sable Seaside Sparrow Habitat: Western Marl Prairies

1. ***Reinitiation Trigger****: Fewer than 60 consecutive days with water levels below ground surface at NP-205 between March 1 and July 15 due to water releases in 2 consecutive years.*

Table 8. Dates that water depths were less than 6.0 feet, NGVD at NP-205 and the number of consecutive dry days at NP-205 during the CSSS nesting window of March 1 and July 15.

Year	Start Date NP-205 < 6.0 feet, NGVD	End Date NP-205 < 6.0 feet, NGVD	Number of Consecutive Days Dry	Number of Consecutive Days Dry (March 1 to July 15)
2011	01/01/11	06/26/11	176	117
2012	01/21/12	05/05/12	106	66
2013	02/04/13	04/23/13	78	54
2014	04/03/14	06/24/14	83	83

2. ITS Exceeded: No

*3. **Reinitiation Required:** No*

*4. **Conclusion:** As shown in Table 8, 83 consecutive dry days were experienced at NP-205 during the 2014 CSSS nesting season. The S-12A, S-343A/B and S-344 closed November 1 as per 2012 ERTP (Figure 8). ERTP superseded the 2002/2006 IOP and was designed to protect the CSSS to the maximum extent possible through water management operations, which resulted in closure periods for the S-12A/B, S-343A/B and S-344 structures. The purpose of closure periods was to provide an improved opportunity for nesting within CSSS-A by maintaining water levels below ground level for a minimum of 60 consecutive days between March 1 and July 15, corresponding to the CSSS breeding season.*

During WY14, the S-12B structure closed on December 13, 2013, 18 days prior to the mandated ERTP closure date of January 1, 2014. The structure was closed based upon WCA-3A Rainfall-Based Management Plan. Although S-12C does not have any mandated closure periods for protection of CSSS under ERTP, this structure also closed December 13, 2013 in accordance with the WCA-3A Rainfall-Based Management Plan. Stage data from NP-205 indicate that water was below ground surface level as early as March 4, 2014, however, there were fifteen non-consecutive days during the period between March 4 and April 3, 2014 in which there was a change from groundwater to surface water conditions. During this time period (i.e. March 4 to April 3, 2014) a total of 3.74 inches of rainfall was measured at NP-205 with 1.95 inches measured in a single day (March 25, 2014). The rise in water level equated to between 0.07 to 4.58 centimeters in water depth above ground surface level as measured at NP-205. Water depths experienced during these reversals could potentially affect CSSS-A nesting due to differences in microtopography within CSSS-A habitat, however, CSSS nest heights average approximately 17 cm above ground surface elevation, therefore some nests within CSSS-A may not have been adversely affected by the transition to surface water conditions. If this time frame (March 4-April 3, 2014) is included within the number of days in which conditions were suitable for nesting, a total of 113 days during the CSSS nesting window of March 1 until July 15 would have been achieved during WY14. Since the S-12A/B, S-343A/B and S-344 structures were all closed in accordance with 2012 ERTP and significant rainfall was experienced at NP-205 in March, USACE has concluded that water releases did not contribute to the transition from groundwater to surface water at NP-205.

USACE recommends that EDEN be used for this type of analysis in future to more accurately estimate water depths throughout CSSS-A as opposed to measurement at a single gauge that may not be fully representative of nesting conditions within this region.

As shown in Table 7, CSSS-A has not recovered under IOP/ERTP operations, but has remained relatively stable since its implementation in 2002. There are several factors that influence population size including competition, predation and prey availability; recent research suggests that sparrow populations are slow to recover, or cannot recover, once they reach very small population sizes due to low adult and juvenile recruitment, many unmated males, biased sex ratios, lower hatch rates and other adverse effects associated with small population size (i.e. the Allee effect) (Boulton et al. 2009; Virzi et al. 2009). In addition, Everglades National Park has been identified as a hotspot for methylmercury. Methylmercury has been shown to have sub-lethal effects on songbirds resulting in reduced reproductive success (Jackson et al. 2011). CSSS feed on insects, including spiders, and dietary uptake of mercury is a concern. In a recent study with Carolina wrens, Jackson et al. (2011) found a 34% reduction in nesting success on mercury-contaminated sites when compared with reference sites. In addition, their analyses consistently ranked mercury contamination as a leading predictor of nest success, more than any other factor evaluated.

USACE suggests that FWS focus on identifying vital rates that would have the greatest effect on enhancing CSSS populations in order to prepare the subspecies for future restoration under the Comprehensive Everglades Restoration Plan (CERP) that will increase water deliveries within Everglades National Park to restore historic ridge and slough habitats. The USACE is concerned that any supplementary refinements to 2012 ERTP that result in further restrictions of water deliveries to Everglades National Park for protection of CSSS are contrary to CERP restoration goals and would further result in adverse effects to other species within Shark Slough as documented within the 2014 RECOVER System Status Report. USACE has fully complied with the ERTP CSSS protection measures and has concluded that reinitiation for this trigger is not necessary at this time.

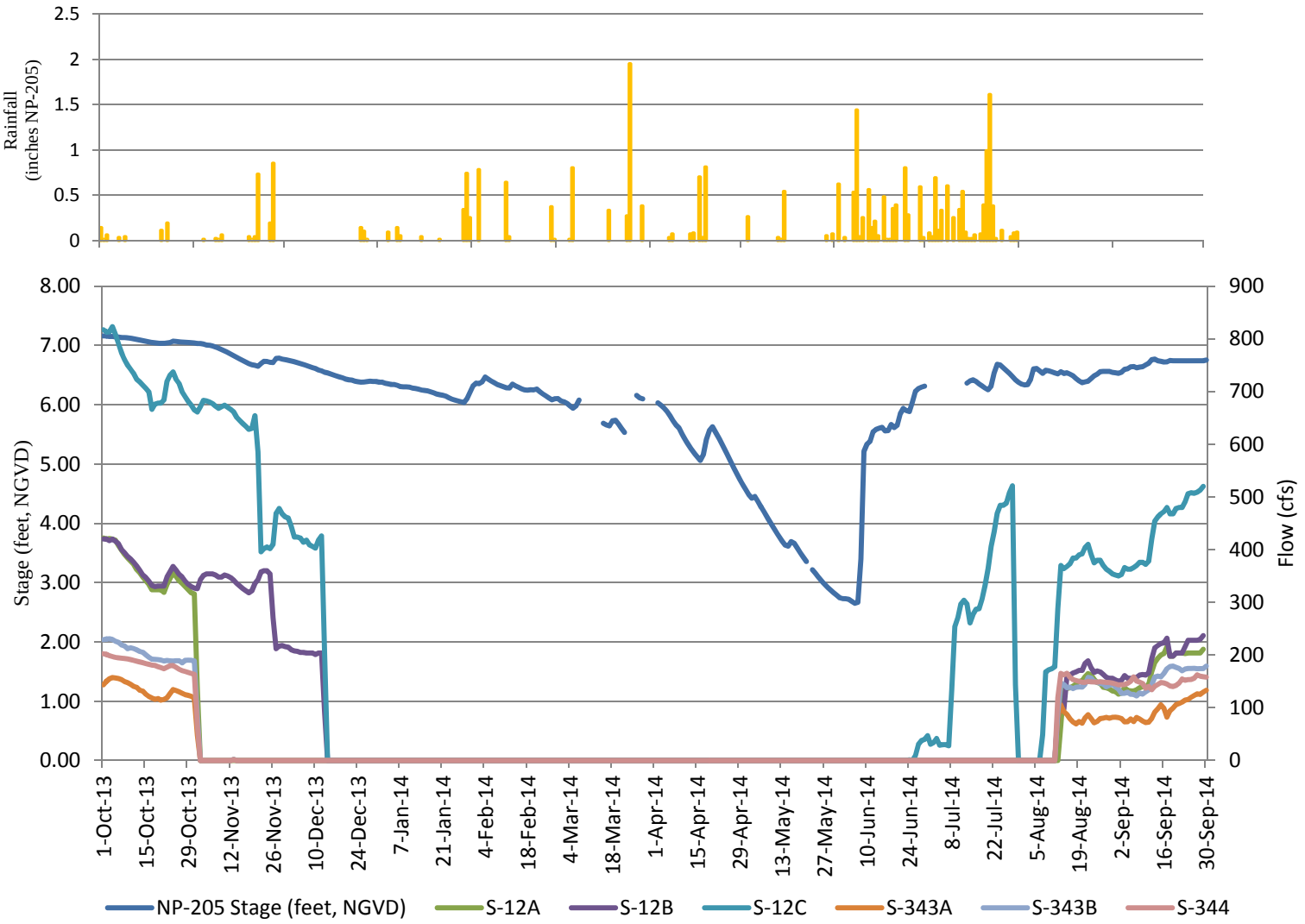

Figure 6. Water control structures S-12A-C, S-343A/B and S-344 Flow (cfs), NP-205 stage (feet, NGVD) and NP-205 rainfall (inches) for WY14

VI. ERTP Performance Measures and Ecological Targets

A. Cape Sable Seaside Sparrow

Performance Measure (PM)

A. NP-205 (CSSS-A): Provide a minimum of 60 consecutive days at NP-205 below 6.0 feet, NGVD beginning no later than March 15.

Table 9. Dates that water depths were less than 6.0 feet, NGVD at NP-205 and the number of consecutive dry days at NP-205 during the CSSS nesting window of March 1 through July 15.

Year	Start Date NP-205 < 6.0 feet, NGVD	End Date NP-205 < 6.0 feet, NGVD	Number of Consecutive Days Dry (NP-205 < 6.0 feet, NGVD) between March 1 and July 15
2011	3/1/2011	6/25/2011	117
2012	3/1/2012	5/6/2012	66
2013	3/1/2013	4/23/2013	54
2014	4/3/2014	6/25/2014	83

A total of 83 consecutive dry days were experienced at Gauge NP-205 between March 1 and July 15, 2014, therefore, this PM was met (Table 9). Please refer to Section V.C. (Cape Sable Seaside Sparrow Habitat: Western Marl Prairies) for more details.

CSSS Ecological Targets (ET)

ET-1 (NP-205, CSSS-A): Strive to reach a water level of ≤ 7.0 feet, NGVD at NP-205 by December 31 for nesting season water levels to reach 6.0 feet, NGVD by mid-March.

Table 10. NP-205 water levels (feet, NGVD) on December 31.

Date	NP-205 Stage (feet, NGVD)
31-Dec-10	4.27
31-Dec-11	6.36
31-Dec-12	6.69
31-Dec-13	6.38

As shown in Table 10, the December 31, 2013 stage at Gauge NP-205 was 6.38 feet NGVD and therefore, this ET was met.

ET-2 (CSSS): Strive to maintain a hydroperiod between 90 and 210 days (3 to 7 months) per year throughout sparrow habitat to maintain marl prairie vegetation.

Table 11. Discontinuous hydroperiod (number of days inundated) as measured at the specified gauges within each CSSS subpopulation between October 1, 2013 and September 30, 2014.

Sub-Population	Gauge	Discontinuous Hydroperiod (Days Inundated)	Within 90-210 Preferred Hydroperiod?
A	NP-205	263	No
	P-34	277	No
B	NP-44	99	Yes
C	E-112	259	No
D	EVER-4*	365	No
E	NP-206	278	No
F	RG-2	100	Yes

*: Note: FWS has indicated that EDEN reported ground surface elevation for EVER-4 is incorrect and therefore, the hydroperiod noted within Table 11 may be inaccurate.

A hydroperiod between 90 and 210 days was realized within CSSS-B and CSSS-F (Table 11). The hydroperiod was longer than preferred in CSSS-A, CSSS-C, CSSS-D and CSSS-E (Table 11), therefore this ET was not met in all subpopulations. Figure 7 through Figure 13 depict the mean daily stage and rainfall for the gauges indentified in Table 11. Figure 7 through Figure 13 were generated using EDEN.

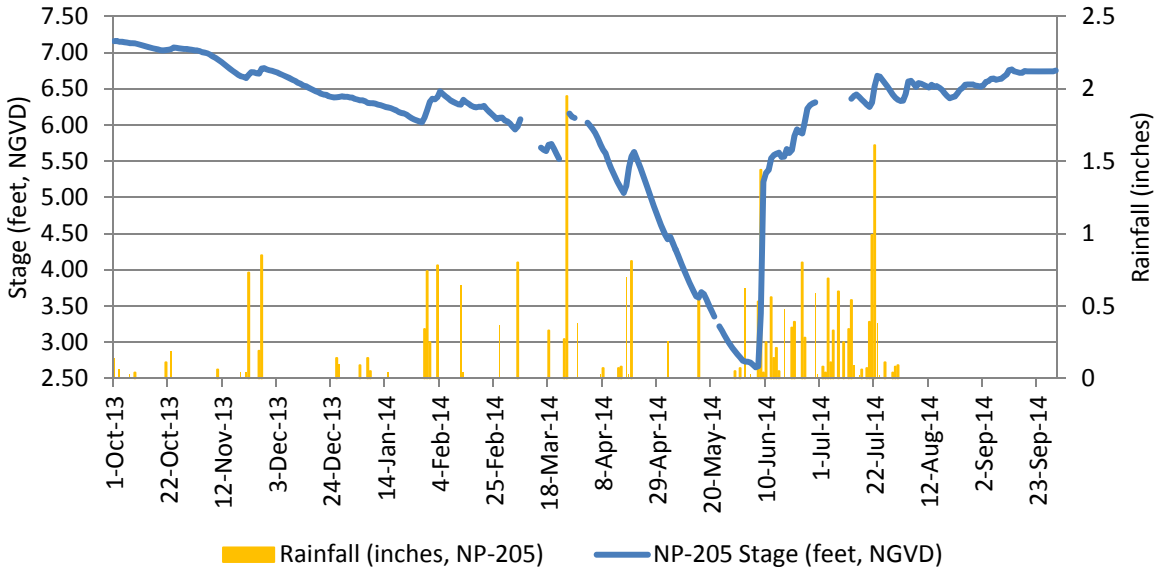

Figure 7. Daily mean stream water level (feet, NGVD) and rainfall (inches) at Gauge NP-205 for WY14.

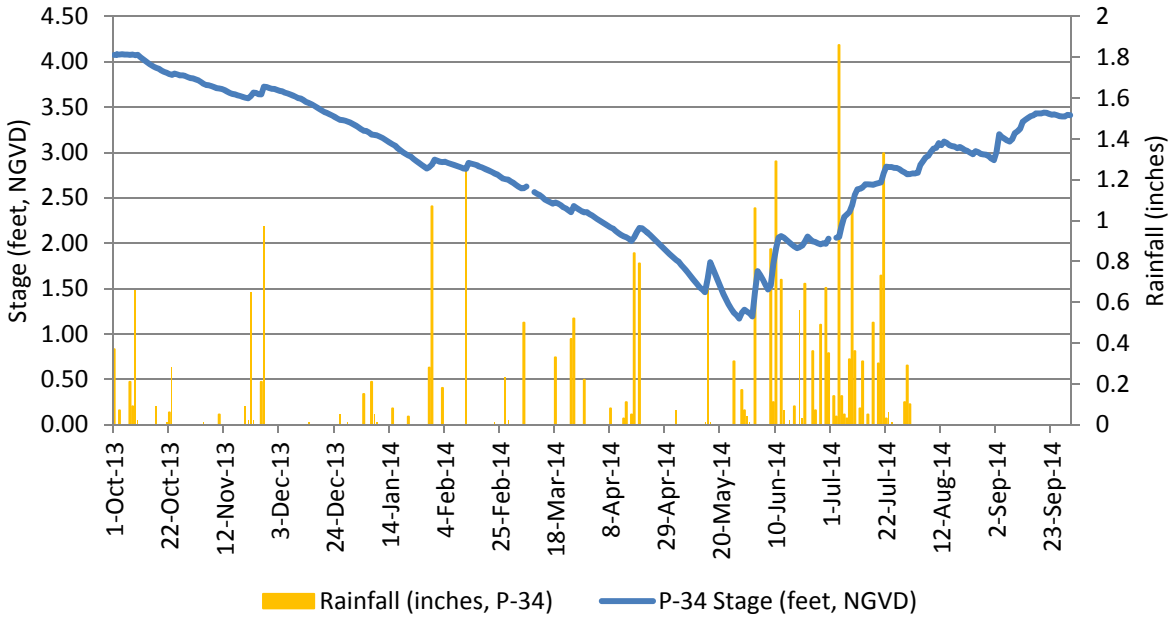

Figure 8. Daily mean stream water level (feet, NGVD) and rainfall (inches) at Gauge P-34 for WY14.

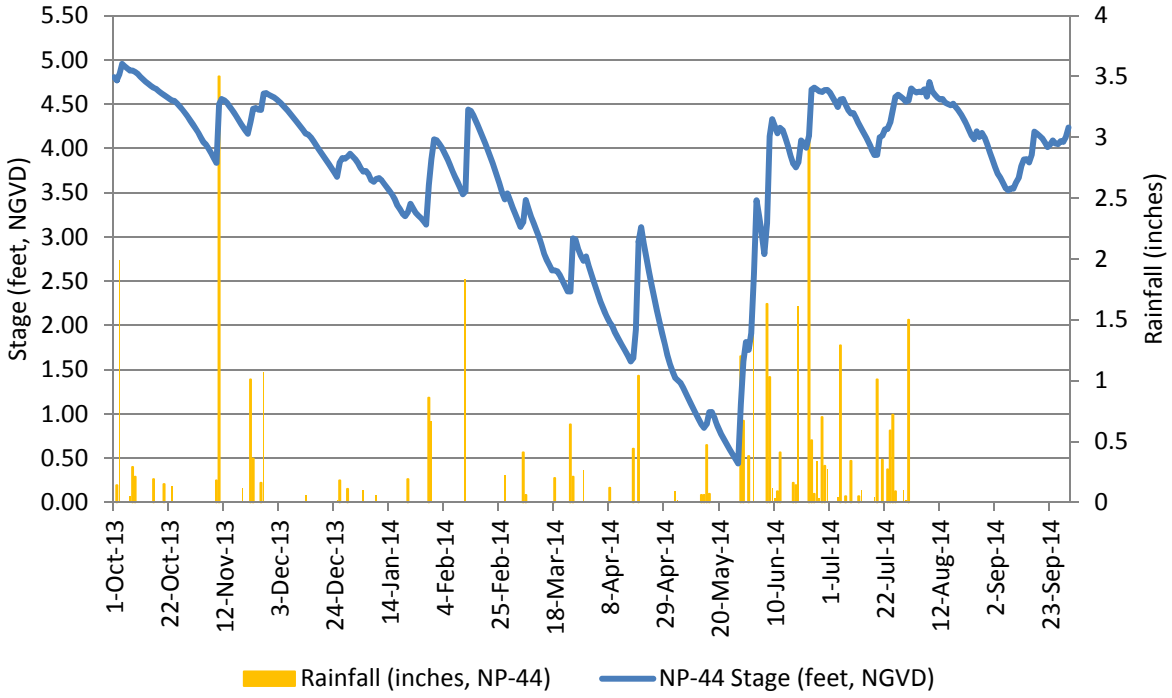

Figure 9. Daily mean stream water level (feet, NGVD) and rainfall (inches) at Gauge NP-44 for WY14.

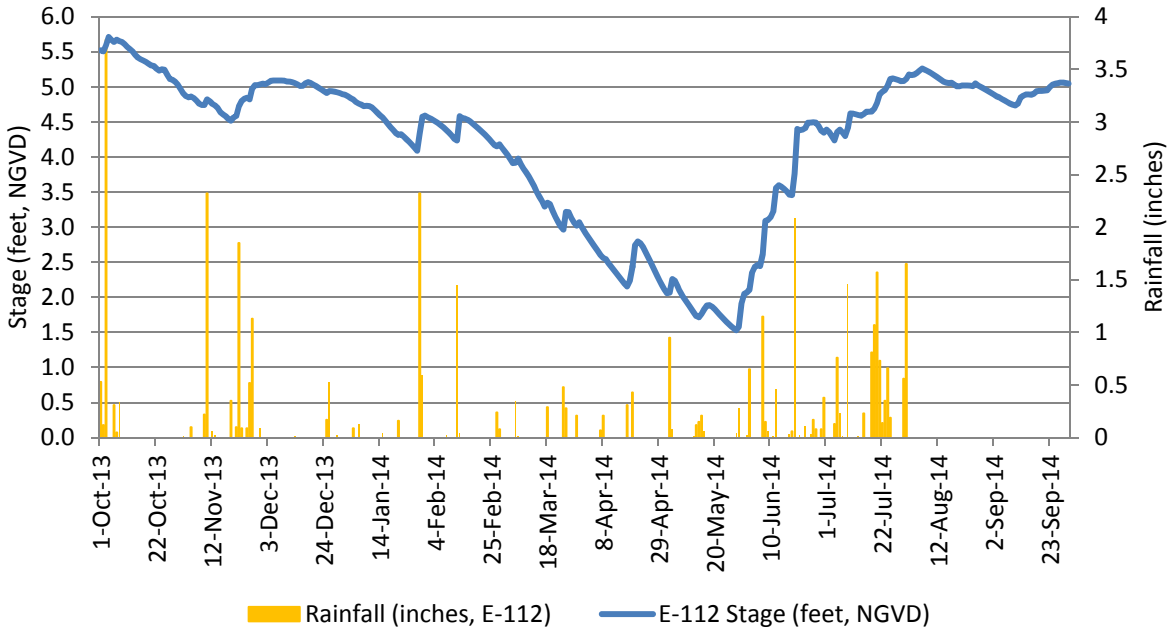

Figure 10. Daily mean stream water level (feet, NGVD) and rainfall (inches) at Gauge E-112 for WY14.

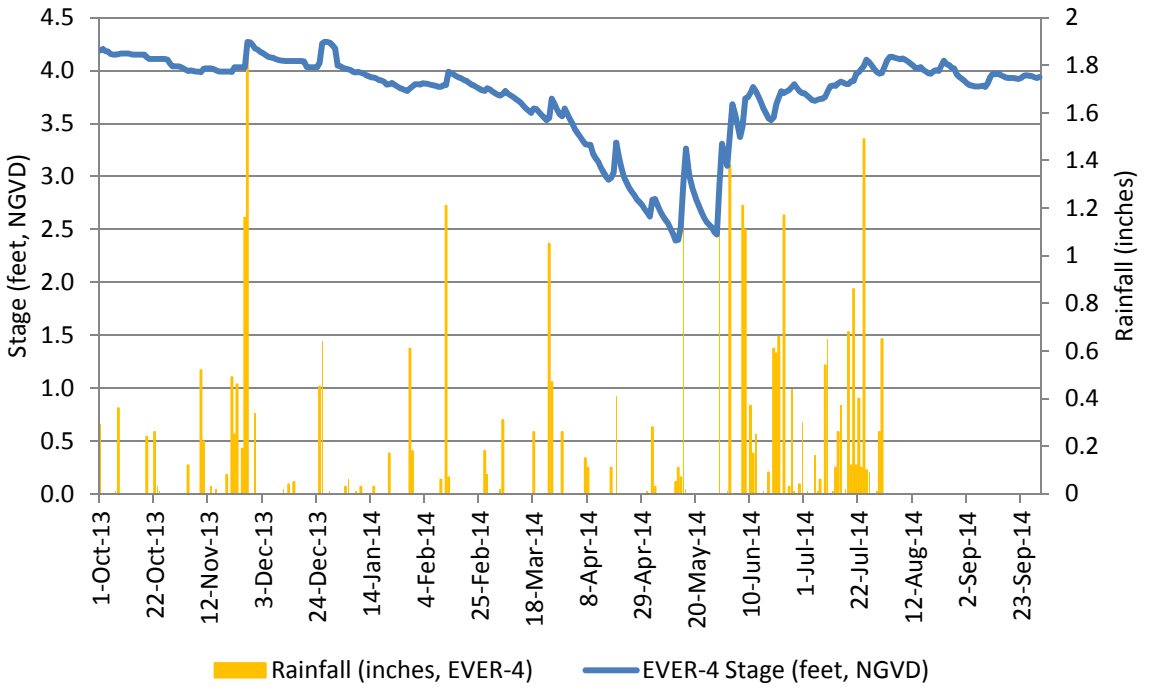

Figure 11. Daily mean stream water level (feet, NGVD) and rainfall (inches) at Gauge EVER-4 for WY14.

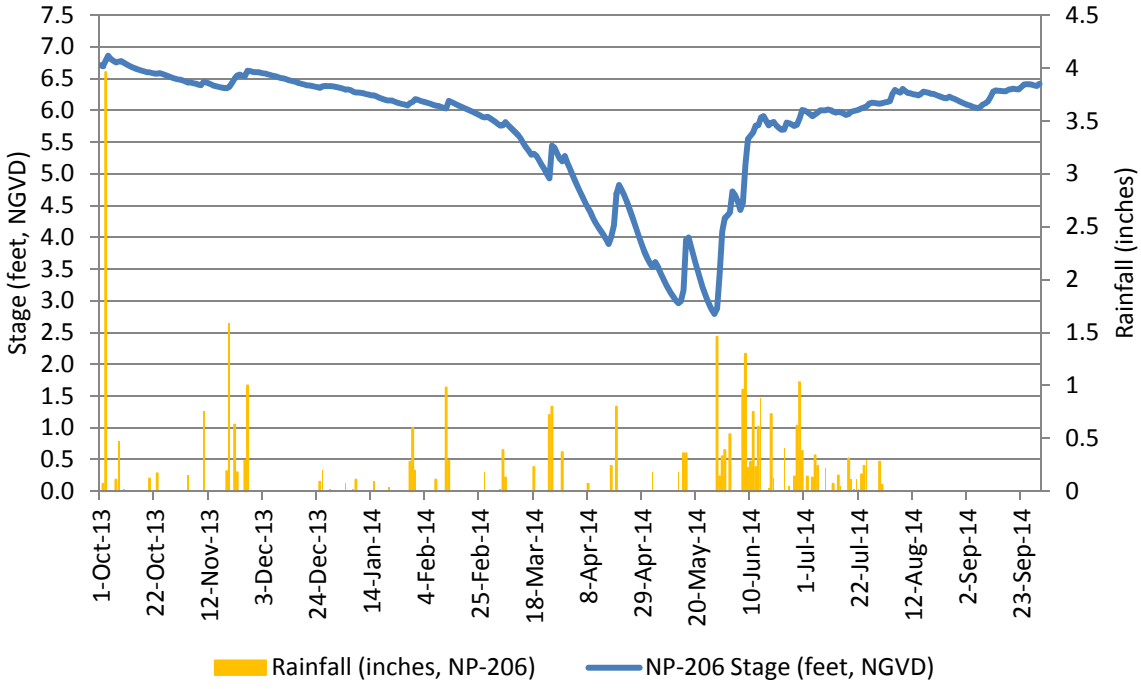

Figure 12. Daily mean stream water level (feet, NGVD) and rainfall (inches) at Gauge NP-206 for WY14.

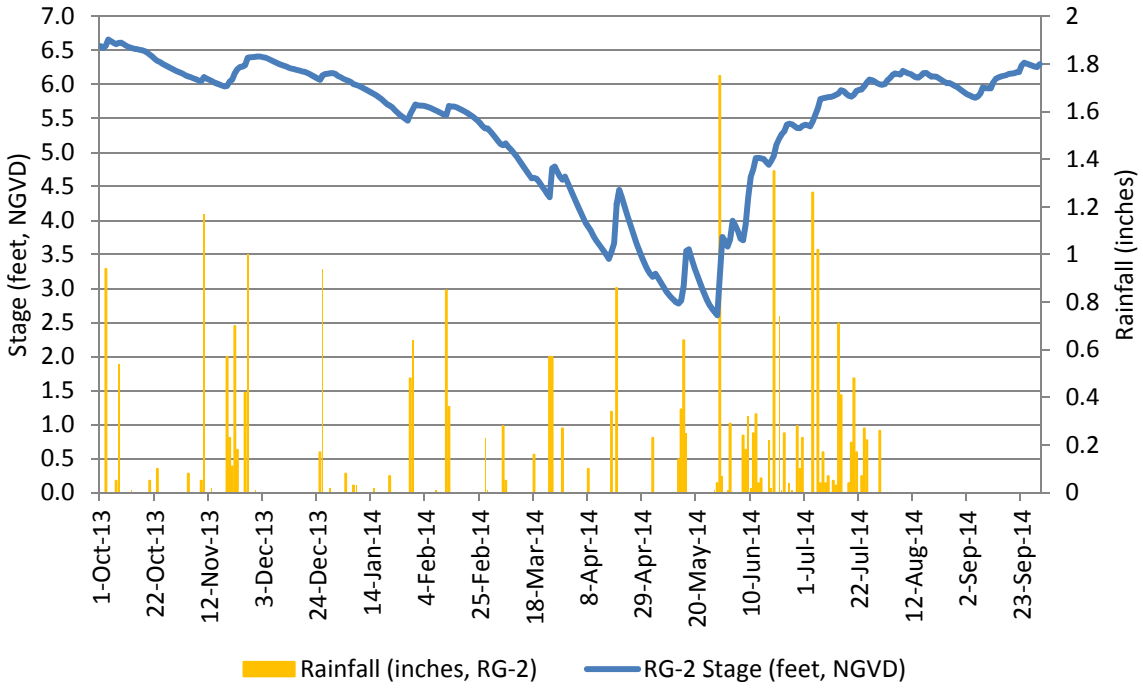

Figure 13. Daily mean stream water level (feet, NGVD) and rainfall (inches) at Gauge RG-2 for WY14.

B. Everglade Snail Kite

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Site 63, 64, 65])

Performance Measures

B. WCA-3A: For snail kites, strive to reach waters levels between 9.8 and 10.3 feet, NGVD by December 31, and between 8.8 and 9.3 feet, NGVD between May 1 and June 1.

Table 12. WCA-3AVG water levels (feet, NGVD) on December 31 and the maximum and minimum water levels between May 1 and June 1.

Year	Total Annual Precipitation (inches; WCA-3A Radar)	WCA-3AVG Stage (feet, NGVD) December 31	Minimum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)	Maximum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)
2010	-	9.57	-	-
2011	42.33	-	7.66	8.12
2012	59.55	10.24	9.24	10.00
2013	51.56	10.29	9.37	9.57
2014	30.80*	10.03	8.60	8.98

*Note: Precipitation data was available only for the period between October 1, 2013 and July 31, 2014.

As shown in Table 12, water levels on December 31 were within the preferred depth range; however, minimum water depths between May 1 and June 1 were lower than preferred during WY14. Although this PM was not met, USACE attributes the lower than preferred water depths during May 1 to June 1 to lack of rainfall experienced throughout the region (9.41 inches during January 1- June 1, 2014). As shown in Figure 14, during the period between April 1 and June 1, 2014 only the S-333 and S-334 structures were open for water supply releases.

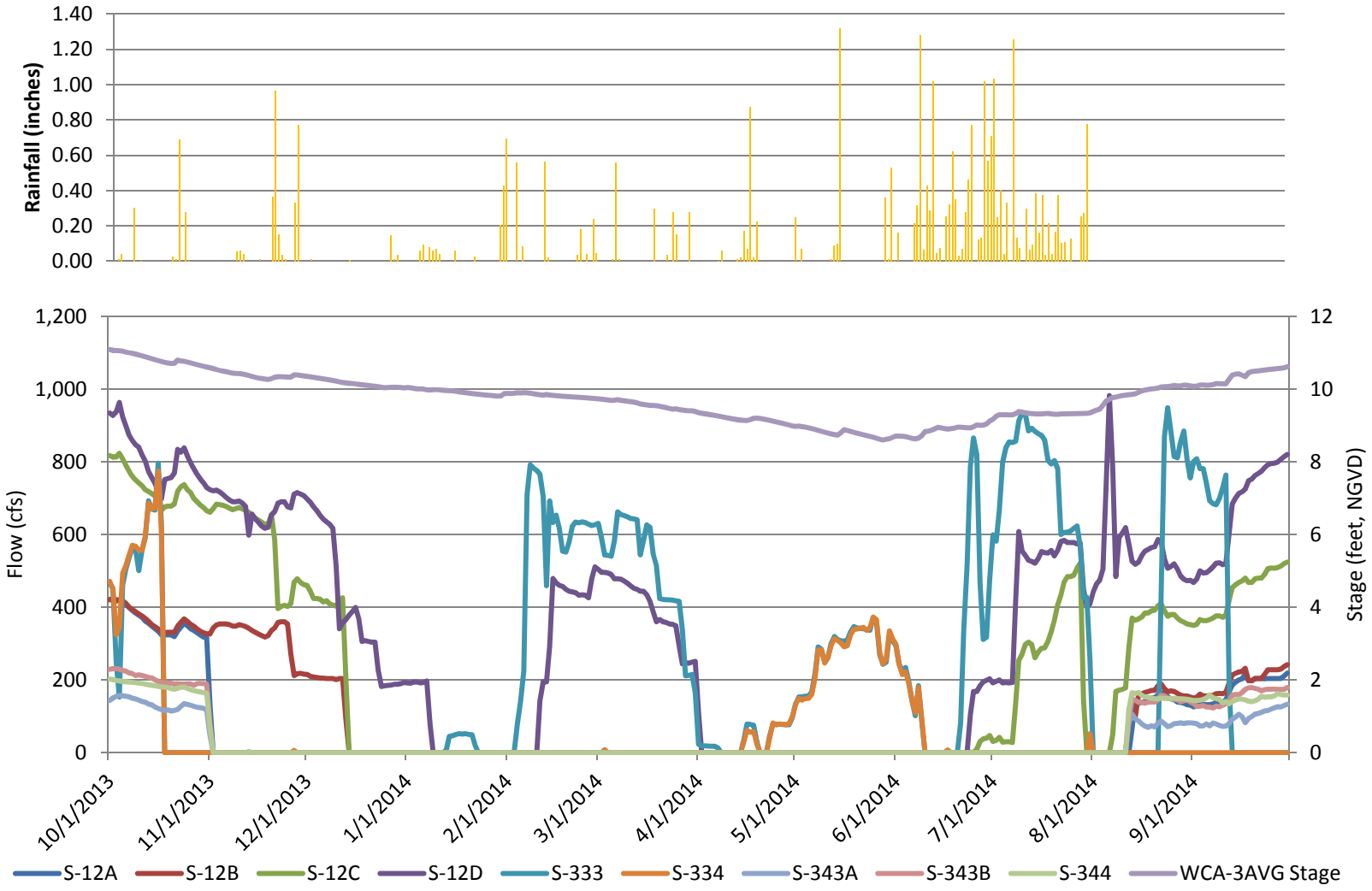

Figure 14. WCA-3AVG Stage (feet, NGVD), WCA-3AVG rainfall (inches) and WCA-3A outflow during WY14.

C. WCA-3A: For apple snails, strive to reach water levels between 9.7 and 10.3 feet, NGVD by December 31 and between 8.7 and 9.7 feet, NGVD between May 1 and June 1.

Table 13. WCA-3AVG water levels (feet, NGVD) on December 31 and the minimum and maximum water levels between May 1 and June 1.

Year	Total Annual Precipitation (inches; WCA-3A Radar)	WCA-3AVG Stage (feet, NGVD) December 31	Minimum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)	Maximum WCA-3AVG Stage May 1 to June 1 (feet, NGVD)
2010	-	9.57	-	-
2011	42.33	-	7.66	8.12
2012	59.55	10.24	9.24	10.00
2013	51.56	10.29	9.37	9.57
2014	30.80*	10.03	8.60	8.98

*Note: Precipitation data was available only for the period between October 1, 2013 and July 31, 2014.

As shown in Table 13, water levels on December 31 were within the preferred depth range; however, minimum water depths between May 1 and June 1 were lower than preferred during WY14. Although this PM was not met, USACE attributes the lower than preferred water depths during May 1 to June 1 to lack of rainfall experienced throughout the region (9.41 inches during January 1- June 1, 2014). As shown in Figure 14, during the period between April 1 and June 1, 2014 only the S-333 and S-334 structures were open for water supply releases.

D. WCA-3A (Dry Season Recession Rate): Strive to maintain a recession rate of 0.05 feet per week from January 1 to June 1 (or onset of the wet season). This equates to a stage difference of approximately 1.0 feet between January and the dry season low.

Table 14. Observed weekly recession rate from January 1 through June, 2014 based upon WCA-3AVG. Positive values indicate falling water, negative values indicate rising water.

Week Ending	Recession Rate (feet per week)*	Week Ending	Recession Rate (feet per week)
7-Jan	0.06	24-Mar	0.09
14-Jan	0.02	31-Mar	0.09
21-Jan	0.07	7-Apr	0.09
28-Jan	0.07	14-Apr	0.09
4-Feb	-0.09	21-Apr	0.03
11-Feb	0.05	28-Apr	0.13
18-Feb	0.03	5-May	0.07
25-Feb	0.04	12-May	0.14
3-Mar	0.05	19-May	-0.05
10-Mar	0.04	26-May	0.14
17-Mar	0.09	2-Jun	-0.10

* Note: Numbers are highlighted to correspond to FWS Multi-Species Transition Strategy (MSTS) stoplight key below (FWS 2010).

FWS 2010 Key:

FWS MSTS Recession Rate (feet per week)
> .10
> 0.05 but ≤ 0.10
0.05
≥ 0.00 but < 0.05
< 0.00

Table 15. Observed WCA-3A stage difference from January 1 through June 1 based upon the WCA-3AVG. Values greater than 1.0 represent stages differences that were greater than recommended between January and June 1.

Year	WCA-3A Stage Difference January 1 to June 1 (WCA-3AVG)
2011	1.90
2012	0.39
2013	0.74
2014	1.34

As shown in Table 14 recession rates were greater than preferred for the week ending April 28, May 12 and May 26; all other recession rates were within the green or yellow

FWS 2010 ranges. Recession rate reversals occurred during the weeks ending February 4, May 19, and June 2, 2014 and were attributed to rainfall events within WCA-3A (Table 13, Figure 14). The dry season stage difference exceeded the preferred range (Table 15). Please refer to Section III.C.1. (Rapid Recession Rates and Amplitude) and Section IV.B, PM-B for further details.

E. WCA-3A (Wet Season Rate of Rise): Manage for a monthly rate of rise ≤0 .25 feet per week to avoid drowning of apple snail egg clusters.

Table 16. Weekly rate of rise (feet/week) based on the WCA-3AVG for the months of February through September. Positive values indicate falling water, negative values indicate rising water.

Year	Average Weekly Rate of Rise (feet/week) based upon WCA-3AVG stage							
	February	March	April	May	June	July	August	September
2011	0.08	0.06	0.16	0.10	-0.23	-0.08	-0.15	-0.09
2012	0.04	0.12	0.02	-0.15	-0.10	0.01	-0.09	-0.18
2013	0.06	0.09	-0.03	-0.03	-0.19	-0.29	0.08	0.00
2014	0.03	0.09	0.09	0.08	-0.10	-0.04	-0.18	-0.13

Table 16 indicates that the average weekly rate of rise did not exceed 0.25 feet per week during the period between February and September 2014. Therefore, PM-E was achieved for WY14.

Ecological Target

ET-3. WCA-3A (Dry Years): Strive to maintain optimal snail kite foraging habitat by allowing water levels to fall below ground surface level between 1 in 4 and 1 in 5 years (208-260 weeks average flood duration) between May 1 and June 1 to promote regenerations of marsh vegetation. Do not allow water levels below ground surface for more than 4 to 6 weeks to minimize adverse effects on apple snail survival.

Table 17. Number of days during May 1 to June 1 in which water levels were below ground surface level as measured at Gauge 3A-3 (Site 63), 3A-4 (Site 64) and 3A-28(Site 65).

Year	Gauge 3A-3	Gauge 3A-4	Gauge 3A-28
2011	32	32	0
2012	31	31	0
2013	0	0	0
2014	30	0	0

As shown in Table 17 and Figure 15, water levels fell below surface elevation at Gauge 3A-3 for a period of 30 days during the May 1 to June 1, 2013 time period. As per the ERTP BO, in July 2011, USACE contracted Phillip Darby, Ph.D to monitor apple snails within WCA-3A. Further information concerning apple snail population estimates is available within the 2013 Apple Snail Monitoring Report (Darby 2014). Monitoring data reveal very few apple snails were encountered within WCA-3A during 2013 and documented the presence of exotic apple snails within WCA-3A (*Pomacea maculata*).

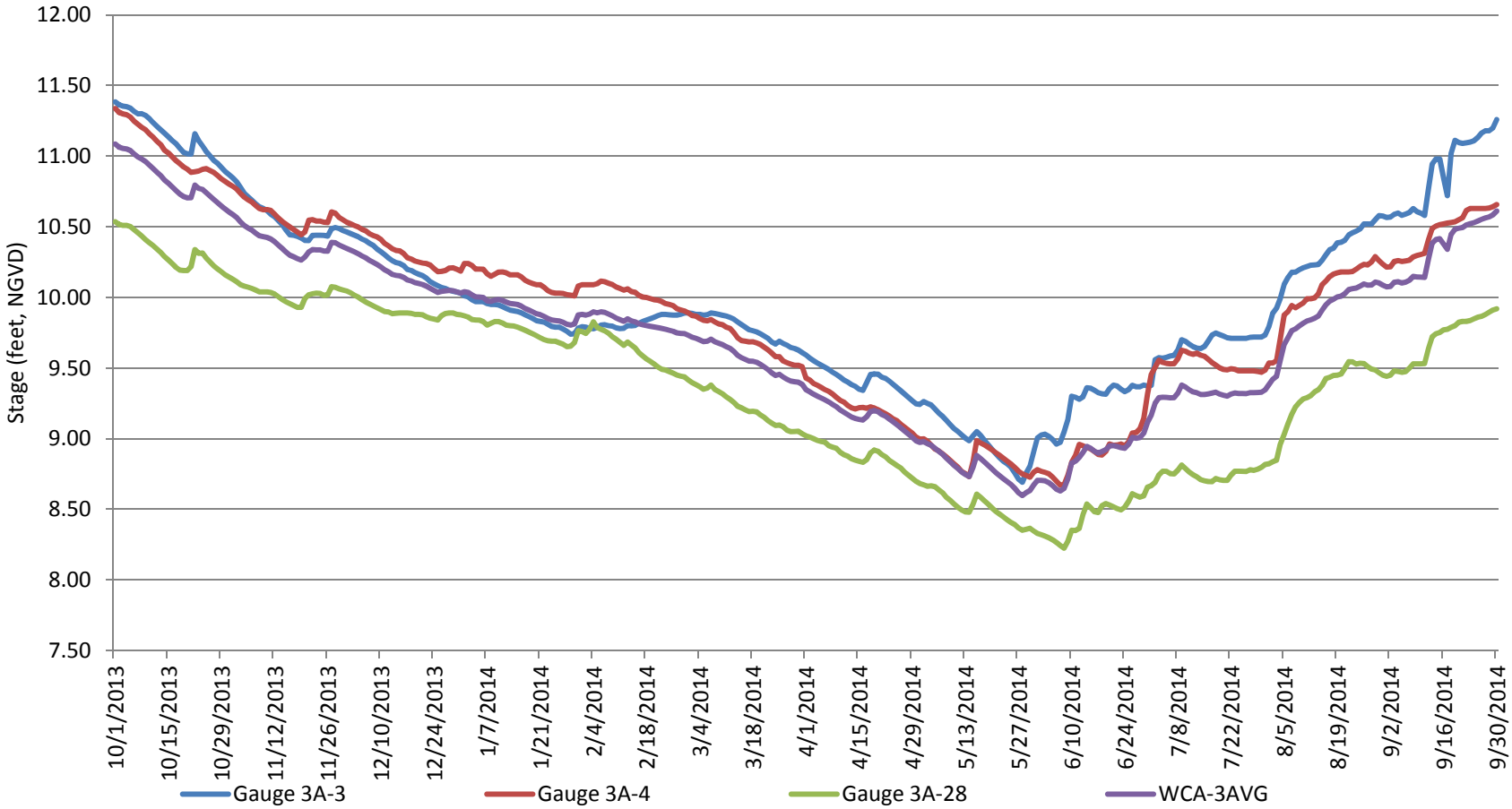

Figure 15. WCA-3A Stage (feet, NGVD) as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and WCA-3AVG (average of Gauges 3A-3, 3A-4 and 3A-28) during WY14.

C. Wood Stork and Wading Birds

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Sites 63, 64, 65])

Performance Measures

F. WCA-3A Dry Season Recession Rate: Recession rate of 0.07 feet per week, with an optimal range of 0.06 to 0.07 feet per week, from January 1 to June 1.

Table 18. Observed weekly recession rate from January 1 through June 1, 2014 based upon WCA-3AVG. Positive values indicate falling water, negative values indicate rising water.

Week Ending	Recession Rate (feet per week)	Week Ending	Recession Rate (feet per week)
7-Jan	0.06	24-Mar	0.09
14-Jan	0.02	31-Mar	0.07
21-Jan	0.07	7-Apr	0.09
28-Jan	0.07	14-Apr	0.09
3-Feb	-0.09	21-Apr	-0.03
10-Feb	0.05	28-Apr	0.13
17-Feb	0.03	5-May	0.07
24-Feb	0.04	12-May	0.14
3-Mar	0.05	19-May	-0.05
10-Mar	0.04	26-May	0.14
17-Mar	0.09	2-Jun	-0.10

* Note: Numbers are highlighted to correspond to FWS MSTS stoplight key below (FWS 2010).

FWS 2010 Key:

FWS MSTS Recession Rate (feet per week)
< 0.17
> 0.07 but ≤ 0.17
Preferred 0.06-0.07
≥ -0.05 but < 0.06
< -0.05

Recession rates for wood storks and wading birds, particularly within the early dry season were within, or near the preferred range (Table 18). In addition, due to rainfall events, reversals were experienced during early February and late May with a reported reversal

on June 2, 2014 of 0.10 feet/week. As previously discussed within Section III.C.1. (Rapid Recession Rates and Amplitude), USACE conducted a retrospective review to determine the potential cause(s) of the rapid recession rates experienced during the 2014 dry season (i.e. January 1 through June 1 2014) and how future operations can avoid exceeding these thresholds. The USACE retrospective review consisted of the same methodology employed for WY11, WY12 and WY13. Figure 3 illustrates precipitation amounts along with S-333, S-334 and S-12 releases throughout the period between January 1 and May 31, 2013. Since the majority of WCA-3A outlet structures (i.e. S-12A & B, S343A/B and S-344) were closed during this period, S-12C & D were opened as needed per the WCA-3A Rainfall-Based Management Plan, S-333/S-334 were opened as needed per the WCA-3A Rainfall-Based Management Plan as well as to meet Lower East Coast water supply demands (as permitted by WCA-3A Interim Regulation Schedule), and rapid recession rates were attributed to dry season evapotranspiration rates, USACE has concluded that there are very limited opportunities to avoid exceeding these thresholds under similar conditions that may occur in the future.

G. WCA-3A (Dry Season): Strive to maintain areas of appropriate foraging depths (5-25 cm) within the Core Foraging Area (18.6 mile radius, CFA) of any active wood stork colony.

In order to assess WY14 in relation to PM-G, an analysis of wood stork foraging water depths in WCA-3A was performed for the time period of October 1, 2013 through September 30, 2014. The following information regarding wood stork colonies, locations, gauges and foraging depths was provided by Lori Miller (FWS, 2010). All data used herein were obtained from EDEN; all data are considered provisional and subject to change, unless otherwise noted.

Wood storks are known to forage in a 360-degree radius of 30 km (18.6 statute miles) from an active colony (FWS 2010; Cox et al. 1994). The optimal water depth for wood storks is 14-15 cm with suboptimal dry water depths ranging from -9 to 4 cm and suboptimal wet water depths ranging from 26 to 40 cm (FWS 2010; Beerens and Cook, unpublished report 2010). Table 19 lists wood stork colonies with core foraging area (CFA) extending into WCA-3A and WCA-3B. Colony locations and CFAs are depicted in Figure 16.

Table 19. Wood stork colonies with Core Foraging Area in WCA-3.

COLONY	COUNTY	LAST ACTIVE	2014 NESTING PAIRS	LATITUDE	LONGITUDE
2B Melaleuca	Broward	2001	0	26.163	-80.348
Crossover	Miami-Dade	2009	0	25.925	-80.835
Jetport	Miami-Dade	2009	60	25.885	-80.844
Jetport South	Miami-Dade	2011	400	25.805	-80.849
3B Mud East	Miami-Dade	2009	0	25.798	-80.494
Tamiami Trail East	Miami-Dade	2010	0	25.758	-80.508
Tamiami Trail East 2	Miami-Dade	2010	0	25.760	-80.508
Tamiami Trail West	Miami-Dade	2011	300	25.760	-80.545
Grossman Ridge West	Miami-Dade	2011	50	25.636	-80.653

Data was obtained from 2013 Interim Wading Bird provided by Peter Frederick in accordance with ERTP BO monitoring.

Table 20 lists gauges analyzed for wood stork CFA within WCA-3A and WCA-3B using elevations obtained through EDEN. Gauge locations are depicted in Figure 16. Table 21 identifies the gauges that are included within the CFA of each active wood stork colony. Please note that although PM-G is specific to active wood stork colonies, the water depth analysis performed within this section examines water depths at each potential colony site listed within Table 19 to determine whether water depths would have been within the appropriate foraging range for the species.

Table 20. Gauges analyzed for wood stork Core Foraging Area water depths.

GAUGE	DESCRIPTION
3A3 (Site 63)	Northeastern WCA-3A
3A4 (Site 64)	Central WCA-3A
3ASW	West-central WCA-3A
3A28 (Site 65)	Southern WCA-3A
3B2 (Site 71)	Central WCA-3B
3BS1W1	Southeastern WCA-3B

Figure 16. Location of wood stork colonies and gauges used for evaluation of PM-G. Circles represent the Core Foraging Area of the colony.

Table 21. List of gauges that occur within the Core Foraging Area of the identified wood stork colonies.

COLONY	GAUGE									
	3A3	3A4	3ASW	3A28	3B2	3BS1W1	NE-1	NP-203	NP-205	NP-206
Tamiami East		X		X	X	X	X	X		X
Tamiami East 2		X		X	X	X	X	X		X
Tamiami West (NESRS)		X		X	X	X	X	X		X
2B Melaleuca	X									
Crossover (WCA-3A)		X	X	X	X				X	
Jetport (WCA-3A)		X	X	X	X				X	
Mud East (WCA-3B)		X		X	X	X	X	X		X
Jetport South (WCA-3A)		X	X	X	X		X		X	
Grossman's Ridge West				X	X	X	X	X	X	X

The wood stork analysis employed daily stage data for the gauges listed in Table 20 in feet NGVD. Water depths were obtained by subtracting the average ground elevations (obtained

from EDEN and converted to NGVD) from the daily stage in feet NGVD. Water depths were then converted to centimeters by multiplying values by 30.48 (30.48 cm = 1 foot). These water depths, now in centimeters, were then used to graph daily foraging depths in Microsoft Excel. On these graphs, the red-yellow-green light method was used to illustrate WY14 water depths. Table 22 illustrates the values used for the red-yellow-green light method. Graphs for gauges within WCA-3 are included within this document as Figure 17 and Figure 18.

Table 22. Foraging water depths in centimeters using the Red-Yellow-Green light method (red = undesirable/unavailable, yellow = suboptimal and green = optimal).

Water Depth (centimeters)
< -9 cm
-9 to 4 cm
5 to 25 cm
26 to 40 cm
> 40 cm

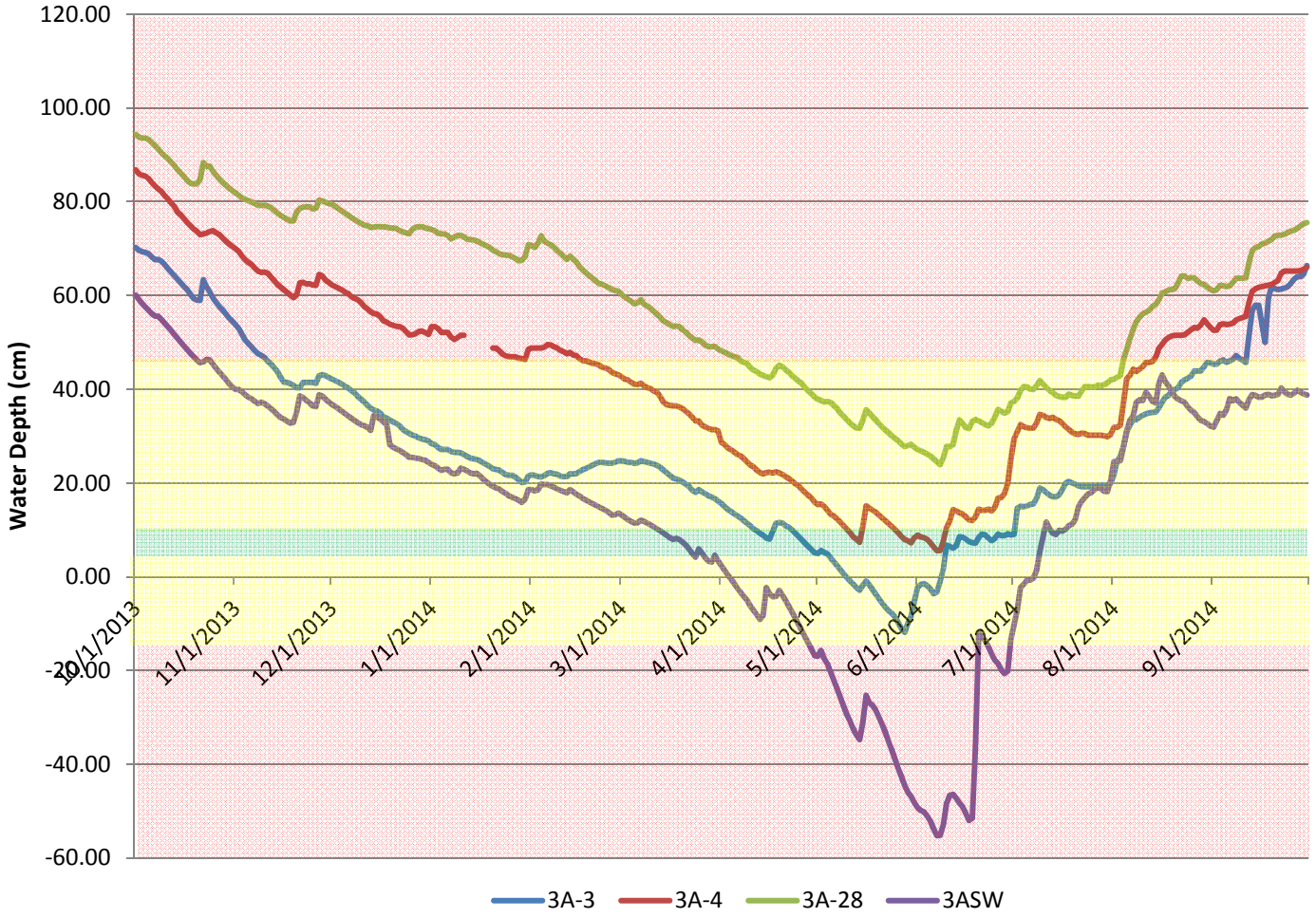

Figure 17. Wood stork foraging depths within WCA-3A as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and Gauge 3ASW.

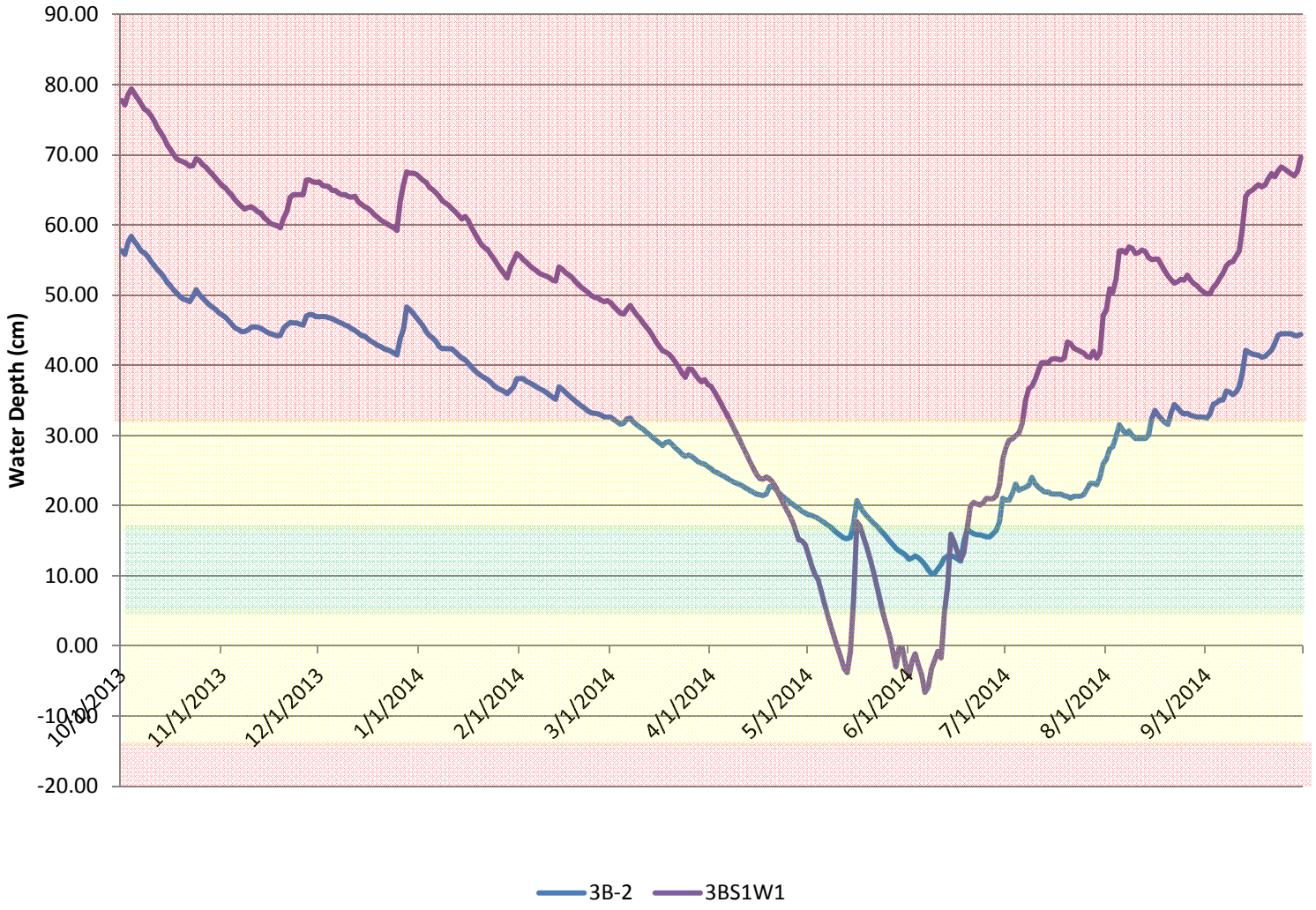

Figure 18. Wood stork foraging depths with WCA-3B as measured at Gauge 3B-2 and Gauge 3BS1W1.

As illustrated in Figure 17 and Figure 18, suitable water depths (optimal/sub-optimal) for wood stork foraging within WCA-3A were available throughout much of the wood stork nesting season at Gauge 3A-3, 3A-4 and 3A-SW. Appropriate foraging depths were experienced between late November 2013 and September 2014 at Gauge 3A-3, November 2013 through late May 2014 at 3A-SW, February and August 2014 at Gauge 3A-4 and April and August 2014 at Gauge 3A-28 in southern WCA-3A. However, undesirable water depths at Gauge 3ASW occurred between May and mid-July 2014 and also at Gauge 3A-28 between October 2013 and March 2014. In WCA-3B, water depths at Gauge 3B-2 were appropriate for wood stork foraging between March and August 2014 (Figure 18). Depths experienced at Gauge 3BS1W1 were deeper than those required to support foraging wood storks throughout much of WY14 with the exception of April through late June 2014. As shown in Table 18, a reversal occurred due to rainfall events during the week ending February 3, 2014 and again during the week ending June 2, 2013, signaling the onset of the rainy season. For further information regarding water management activities during the wood stork breeding season, please refer to Section III.C.1 (Rapid Recession Rates and Amplitude). The 2014 South Florida Water Management District Annual Wading Bird Report is expected to be available in December 2014 (www.sfwmd.gov).

H. WCA-3A (Dry Season): Strive to maintain areas of appropriate foraging depths (5-15 cm) within the Core Foraging Area (7 to 9 mile radius) of any active white ibis or snowy egret colony.

In order to assess WY14 in relation to PM-H, an analysis of white ibis foraging water depths in WCA-3 was performed for the time period of October 1, 2013 through September 30, 2014. The following information regarding white ibis colonies, locations, gauges and foraging depths was provided by Lori Miller (FWS, 2010). All data used herein were obtained from EDEN, all data is considered provisional and subject to change, unless otherwise noted.

White ibis are known to forage in a 360-degree radius of 10 km (6.2 statute miles) from an active colony (FWS 2010; Bancroft et al. 1994). The optimal water depth for white ibis foraging in WCA-3 is 7-16 cm with suboptimal dry water depths ranging from -15 to 6 cm and suboptimal wet water depths ranging from 17 to 31 cm (FWS 2010, Beerens 2008). Table 23 lists active white ibis colonies with CFAs extending into WCA-3 from 2002 through 2013. Colony locations and CFAs are depicted in Figure 19.

Table 23. Number of active white ibis nests in the ERTP action area as reported by the South Florida Wading Bird Reports from 2002 through 2013. The 2014 South Florida Wading Bird Report is expected in December 2014.

COLONY	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Tamiami West	400	150		500	600	400		5,000		+	2,500	4,100	NA
3B Mud East		122	1,153		203								NA
6th Bridge						10,661	1,000		124	5,000	296		NA
Alley North	20,000	6,033	16,000	12,750	13,566	8		17,200	500		6,500	8,000	NA
Anhinga Alley													NA
Big Melaleuca													NA
Big Pond													NA
Cypress City						200							NA
East Central Ag													NA
Ganga								9					NA
Heron Alley													NA
L-67					16								NA
Pocket													NA
Unnamed 2			56										NA
West Ag Canal													NA
West Central Ag													NA
Total	20,400	6,305	17,209	13,250	14,385	11,269	1,000	22,209	624	5,000	9,296	12,100	NA

+: Indicates species present and nesting, but unable to determine numbers.
NA: No Data Available.

Table 24 lists gauges analyzed for white ibis CFA within WCA-3A and WCA-3B using elevations obtained through EDEN. Gauge locations are depicted in Figure 19. Table 25 identifies the gauges that are included within the CFA of each active white ibis colony. Please note that although PM-H is specific to active white ibis colonies, the water depth analysis performed within this section examines water depths at each potential colony site listed within Table 23 to determine whether water depths would have been within the appropriate foraging range for the species.

Table 24. Gauges analyzed for white ibis Core Foraging Areas water depths.

GAUGE	DESCRIPTION
3A3 (Site 63)	Northeastern WCA-3A
3A4 (Site 64)	Central WCA-3A
3ASW	West-central WCA-3A
3A28 (Site 65)	Southern WCA-3A
3B2 (Site 71)	Central WCA-3B
3BS1W1	Southeastern WCA-3B

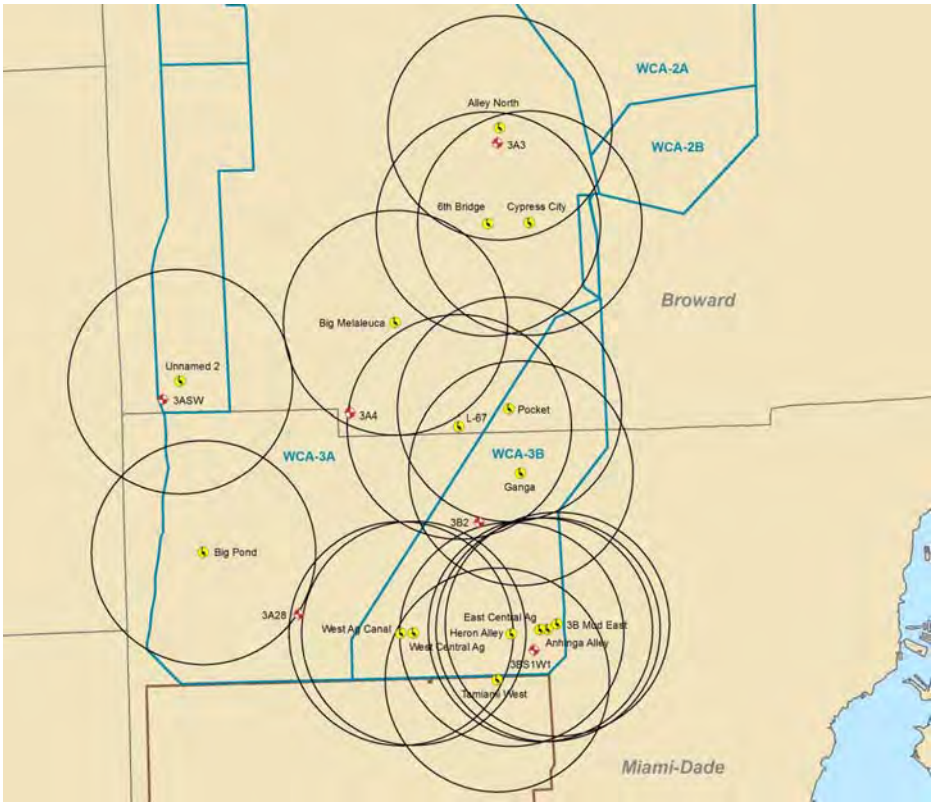

Figure 19. Location of white ibis colonies and gauges used for evaluation of PM-H. Circles represent the Core Foraging Area of the colony.

Table 25. List of gauges that occur within the Core Foraging Area of the identified white ibis colonies.

COLONY NAME	GAUGE					
	3A3	3A4	3ASW	3A28	3B2	3BS1W1
Tamiami West (NESRS)						X
Mud East (WCA-3B)					X	X
6th Bridge	X					
Alley North	X					
Anhinga Alley					X	X
Big Melaleuca		X				
Big Pond				X		
Cypress City	X					
East Central Ag					X	X
Ganga					X	
Heron Alley					X	X
L-67		X			X	
Pocket					X	
Unnamed 2			X			
West Ag Canal				X		X
West Central Ag				X	X	X

The white ibis analysis employed daily stage data for the gauges listed in Table 24 in feet NGVD29. Water depths were obtained by subtracting the average ground elevations (obtained from EDEN and converted to NGVD29) from the daily stage in feet NGVD29. Water depths were then converted to centimeters by multiplying values by 30.48 (30.48 cm = 1 foot). These water depths, now in centimeters, were then used to graph daily foraging depths in Microsoft Excel. On these graphs, the red-yellow-green light method was used to illustrate WY14 water depths. Table 26 illustrates the values used for the red-yellow-green light method. Graphs for gauges within WCA-3 are included within this document as Figure 20 and Figure 21.

Table 26. Foraging water depths in centimeters using the Red-Yellow-Green light method (red=undesirable/unavailable, yellow=suboptimal and green=optimal).

Water Depth (centimeters)
<-16 cm
-15 to 6 cm
7 to 16 cm
17 to 31 cm
>32 cm

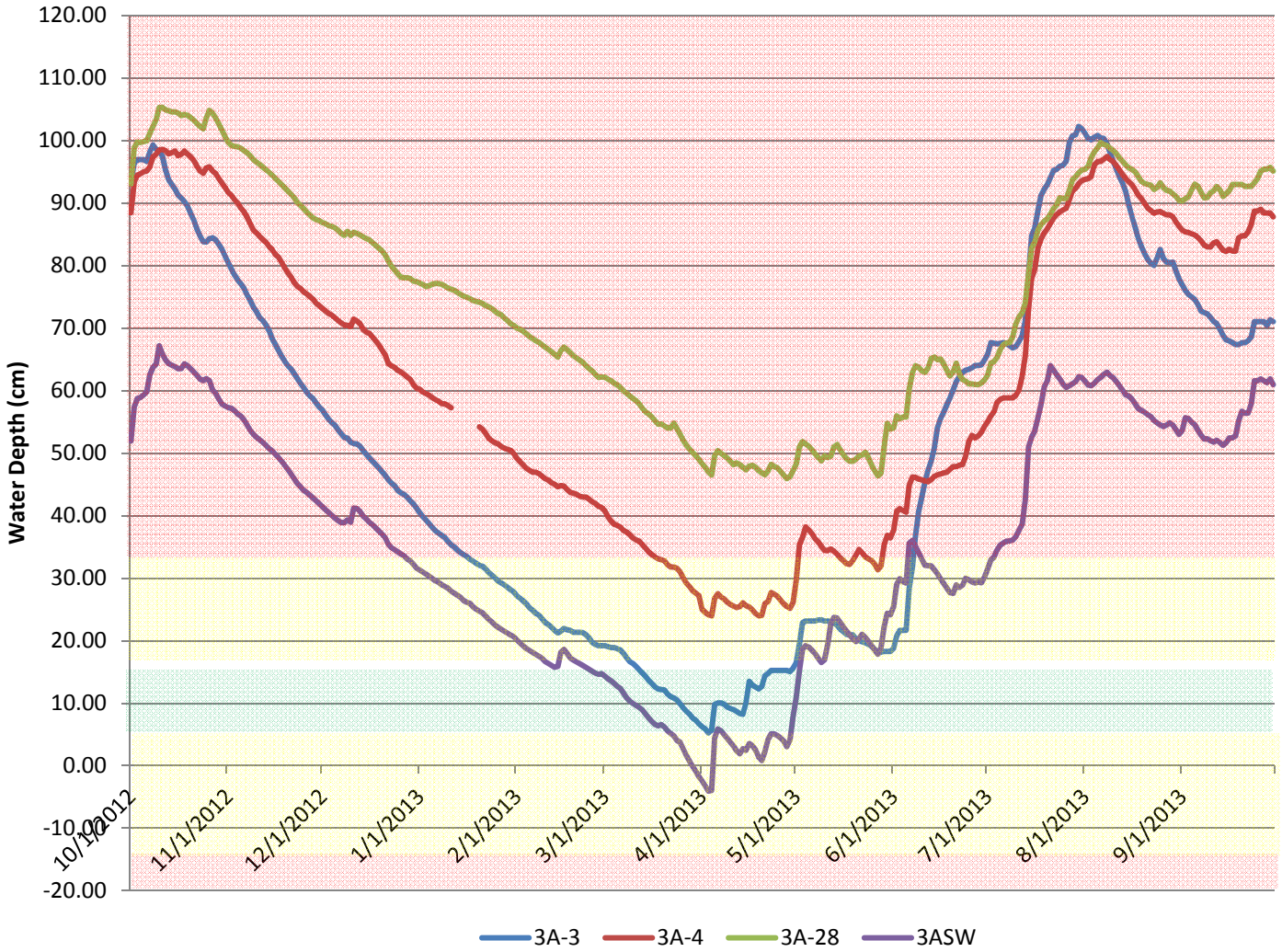

Figure 20. White ibis foraging depths within WCA-3A as measured at Gauge 3A-3, Gauge 3A-4, Gauge 3A-28 and Gauge 3ASW.

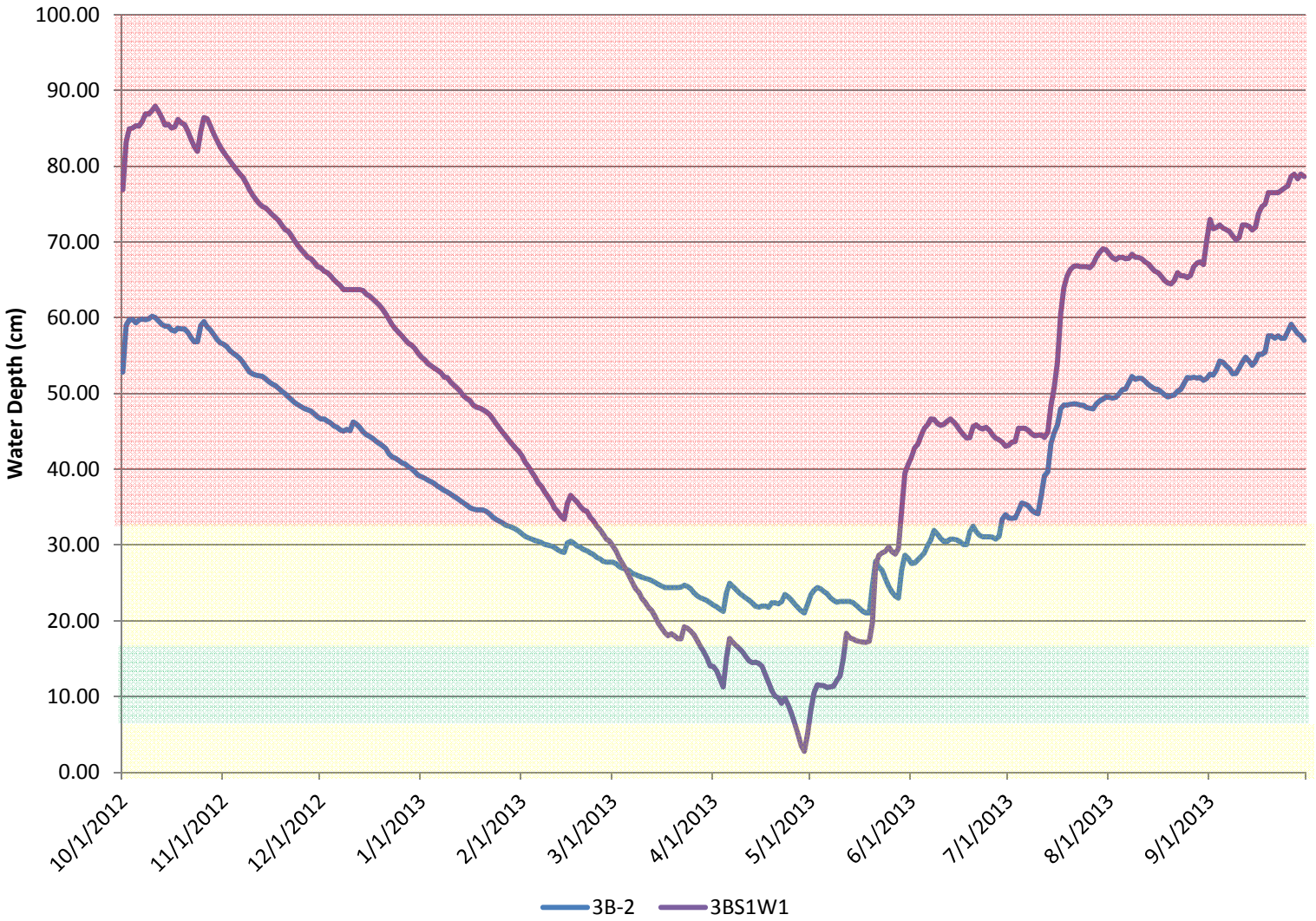

Figure 21. White ibis foraging depths within WCA-3B as measured at Gauge 3B-2 and Gauge 3BS1W1.

As illustrated in Figure 20, suitable water depths (optimal/sub-optimal) for white ibis foraging within WCA-3A were available throughout much of WY14 nesting season at Gauge 3A-3 and 3ASW and at Gauge 3A-4 between late March and the beginning of May. Suitable water depths were not attained at Gauge 3A-28 in southern WCA-3A during WY14. In WCA-3B, water depths at Gauge 3B-2 were appropriate (sub-optimal) for white ibis foraging throughout a portion of WY14 between mid January through late June (Figure 21). Depths experienced at Gauge 3BS1W1 were also deeper than those required to support foraging white ibis other than during the period between late February and June 2014. As shown in Table 18, recession rates for wood storks and wading birds, particularly within the early dry season were within, or near the preferred range (Table 18). In addition, due to rainfall events, reversals were experienced during early February and late May with a reported reversal on June 2, 2014 of 0.10 feet/week. For further information regarding water management activities during the white ibis breeding season, please refer to Section III.C.1 (Rapid Recession Rates and Amplitude). The 2014 South Florida Water Management District Annual Wading Bird Report is expected to be available in December 2014 (www.sfwmd.gov).

D. Tree Islands

(Note: All stages for WCA-3A are as measured at WCA-3AVG [Sites 63, 64, 65])

Performance Measure

I. *WCA-3A: For tree islands, strive to keep high water peaks < 10.8 feet, NGVD, not to exceed 10.8 ft for more than 60 days per year, and reach water levels < 10.3 feet, NGVD by December 31.*

Table 27. WCA-3A peak high water levels, number of days WCA-3AVG was greater than 10.8 feet, NGVD during WY14 and the WCA-3AVG stage (feet. NGVD) on December 31.

Year	WCA-3AVG High Water Peak Stage (feet, NGVD)	Number of Days WCA-3AVG > 10.8 feet, NGVD	WCA-3A Stage (feet, NGVD) on December 31
2010	10.68	0	9.57
2011	11.33	59	10.40
2012	11.64	135	10.29
2013	11.09	15	10.03

As indicated in Table 27, water levels as measured at WCA-3AVG exceeded 10.8 feet, NGVD for a total of 15 days during WY14 (October 1-15, 2013). PM-I was achieved in WY14.

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Appendix A

Testing the use of EDEN water-level data to assess hydrology in northeast ENP

For discussion with USACE and USFWS

Prepared by Pamela Telis and Bryan McCloskey,
USGS

November 7, 2014

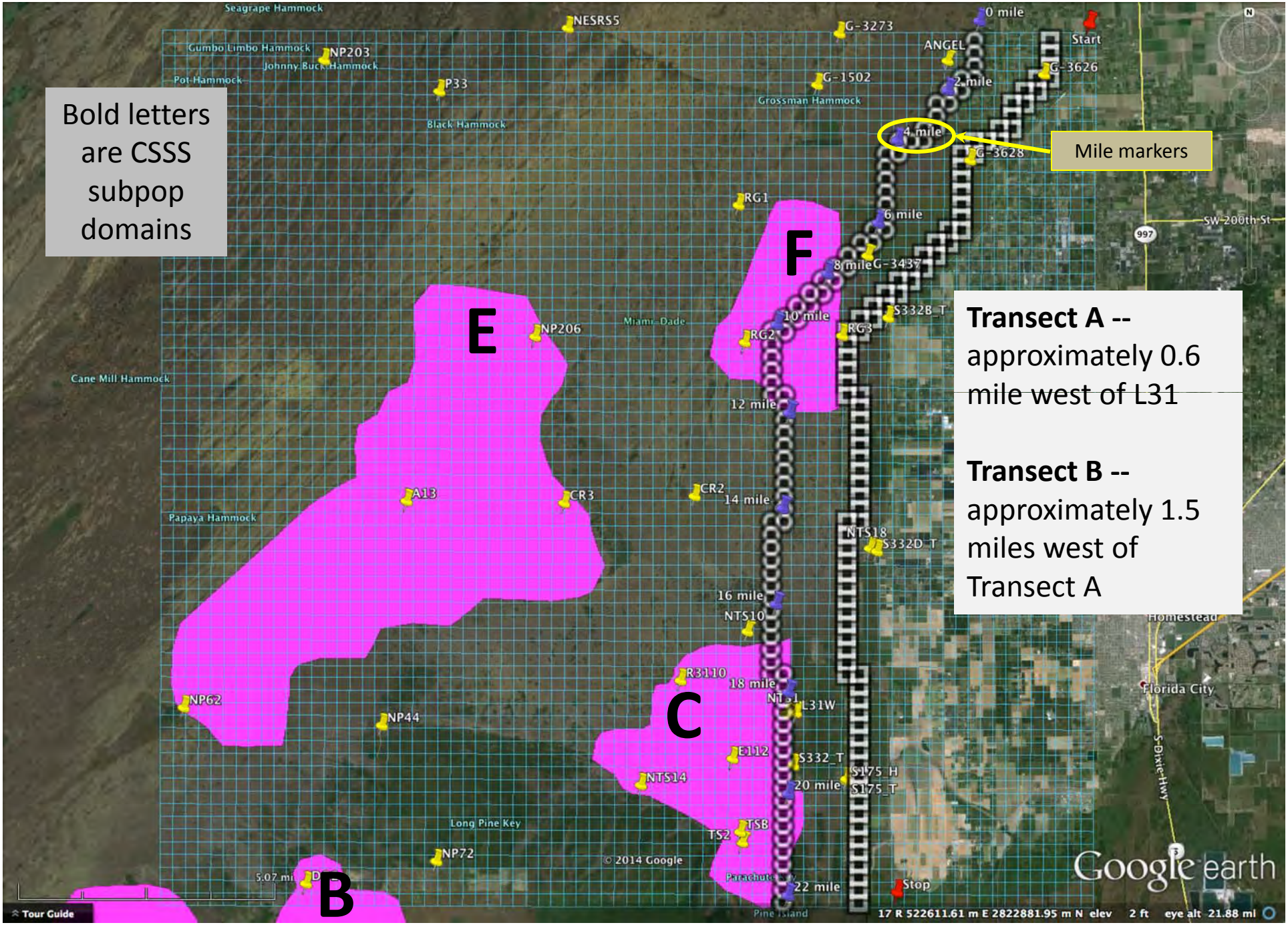
Purpose

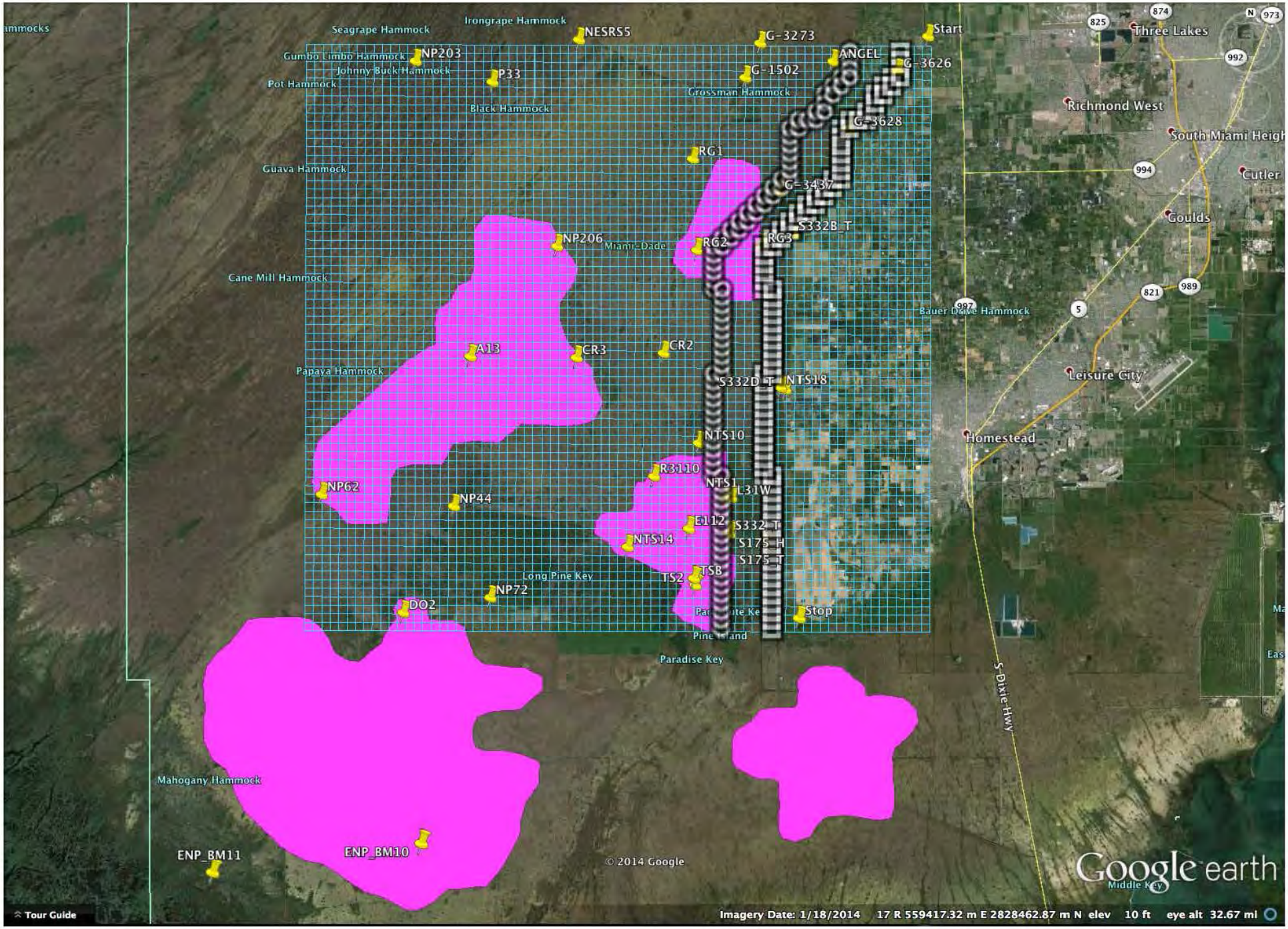
- Use EDEN daily water-level surfaces and

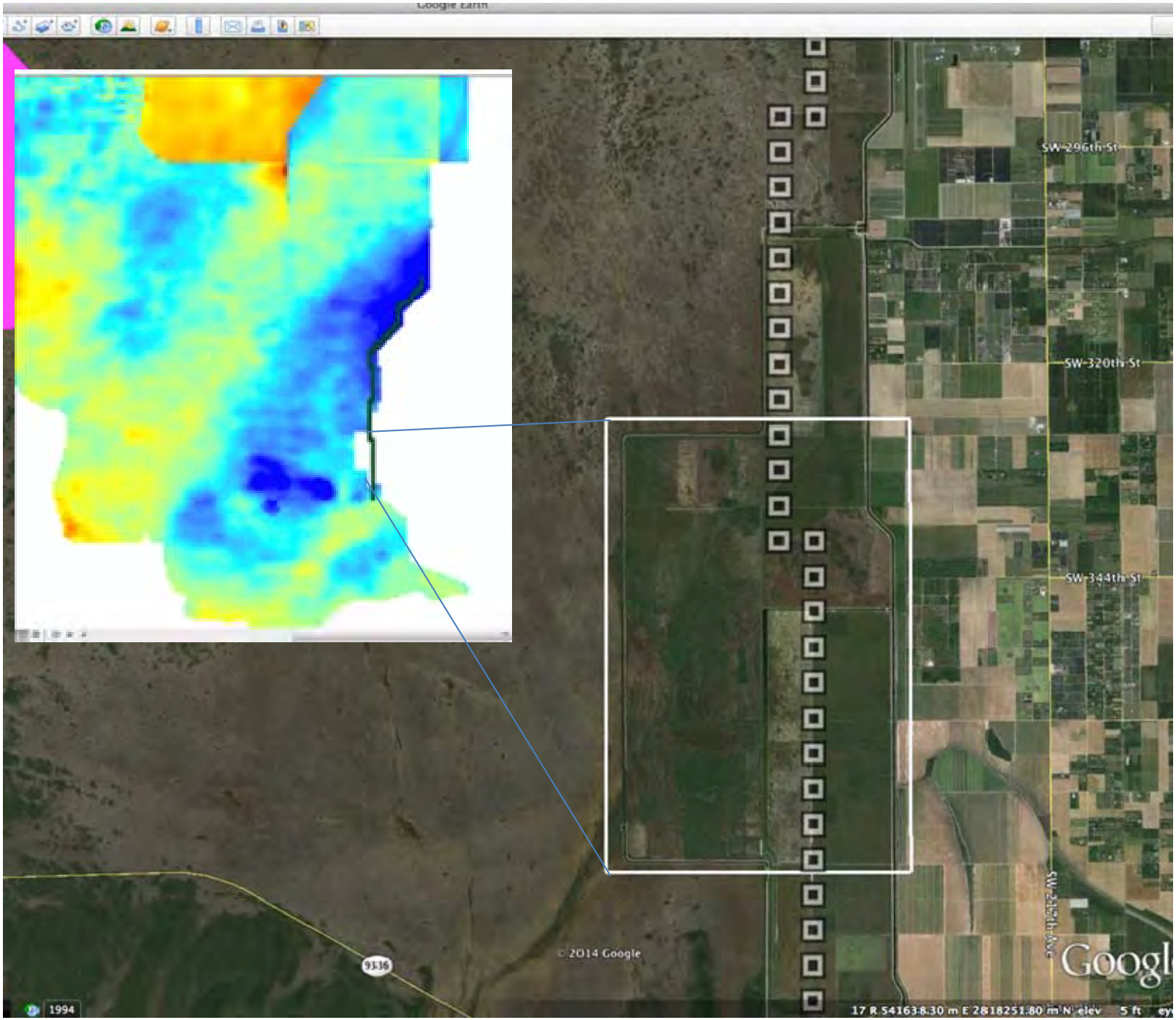
  northeastern ENP during the period March 1 through June 1, 2014.

Method

- Identified EDEN grid cells for a transect 0.6 mile west of L31 in eastern ENP (Transect A)
- Identified EDEN grid cells for a transect about 1.5 miles west of Transect A (Transect B)
- Using the EDEN TransectPlotter tool, plotted water levels from the EDEN daily water-level surfaces and ground elevations along each transect for the period March 1-June 1, 2014. Ground elevation is taken from the EDEN ground-elevation DEM.

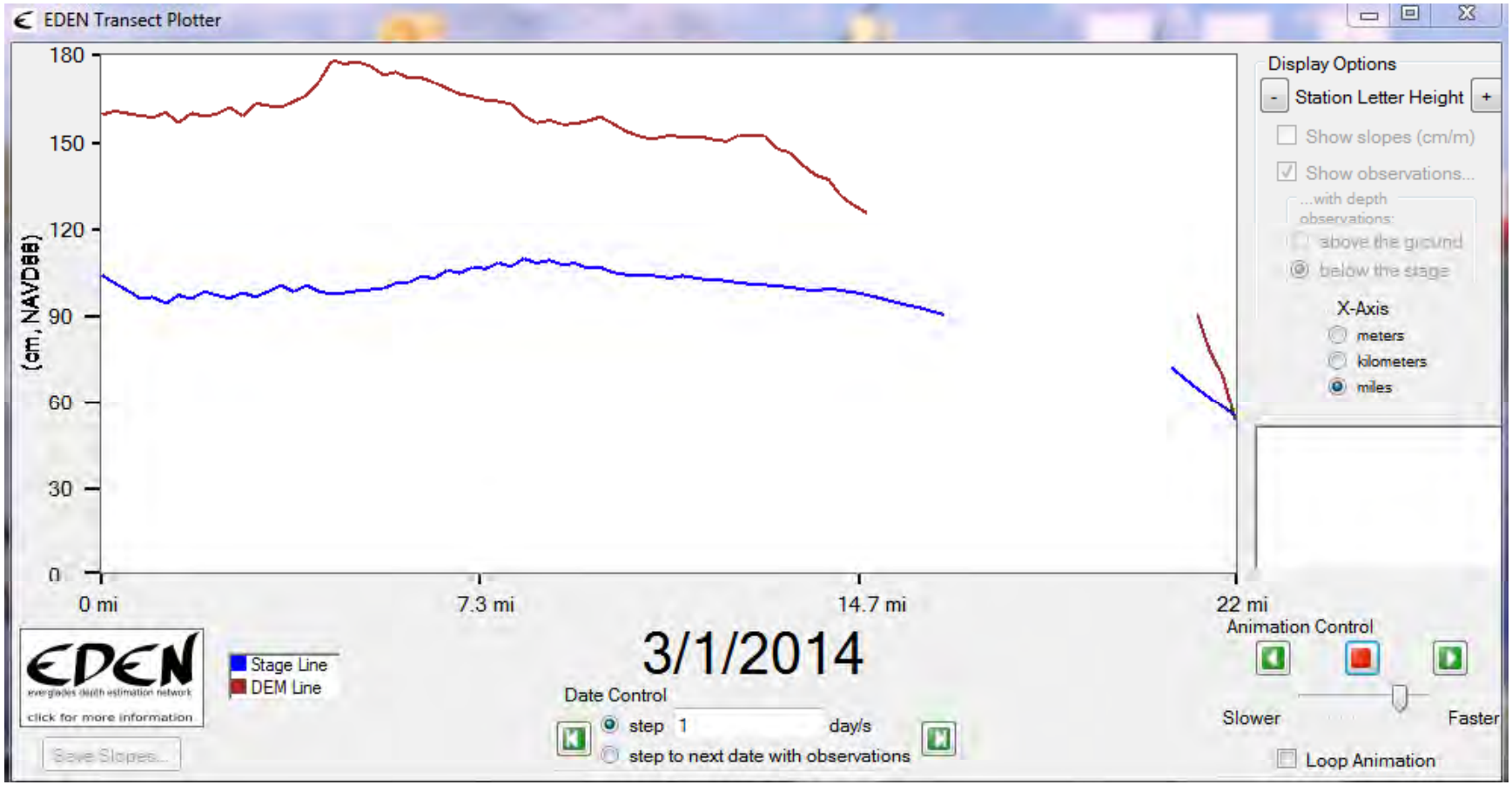

Bold letters are CSSS subpop domains
Mile markers
Transect A -- approximately 0.6 mile west of L31
Transect B -- approximately 1.5 miles west of Transect A
E
F
C
B
Seagrape Hammock
Gumbo Limbo Hammock
Johnny Buck Hammock
Pot Hammock
Black Hammock
Grossman Hammock
Cane Mill Hammock
Papaya Hammock
Long Pine Key
Miami-Dade
Florida City
Homestead
S Dixie Hwy
SW 200th St
997
NESRS5
NP203
P33
G-3273
G-1502
ANGEL
Start
G-3626
G-3628
G-3437
S332B_T
S332D_T
S332_T
S175_H
S175_T
NP206
NP62
NP44
NP72
A13
CR3
CR2
RG1
RG2
RG3
R3110
E112
NTS14
TS2
TS8
NTS18
NTS10
L31W
0 mile
2 mile
4 mile
6 mile
8 mile
10 mile
12 mile
14 mile
16 mile
18 mile
20 mile
22 mile
Stop
© 2014 Google
Google earth
Tour Guide
17 R 522611.61 m E 2822881.95 m N elev 2 ft eye alt 21.88 mi


Seagrape Hammock
Irongrape Hammock
NESRS5
G-3273
Start
Gumbo Limbo Hammock
NP203
ANGEL
G-3626
Johnny Buck Hammock
P33
G-1502
Pot Hammock
Grossman Hammock
Black Hammock
G-3628
RG1
Guava Hammock
G-3437
S332B_T
NP206
Miami-Dade
RG2
RG3
Cane Mill Hammock
A13
CR3
CR2
Papaya Hammock
S332D_T
NTS18
NTS10
R3110
NP62
NTS1
L31W
NP44
E112
S332_T
NTS14
S175_H
S175_T
TSB
TS2
Long Pine Key
NP72
DO2
Stop
Pine Island
Paradise Key
Mahogany Hammock
ENP_BM11
ENP_BM10
© 2014 Google
Three Lakes
Richmond West
South Miami Heigh
Cutler
Goulds
Bauer Drive Hammock
Leisure City
Homestead
S Dixie Hwy
Middle Key
Google earth
Tour Guide
Imagery Date: 1/18/2014 17 R 559417.32 m E 2828462.87 m N elev 10 ft eye alt 32.67 mi

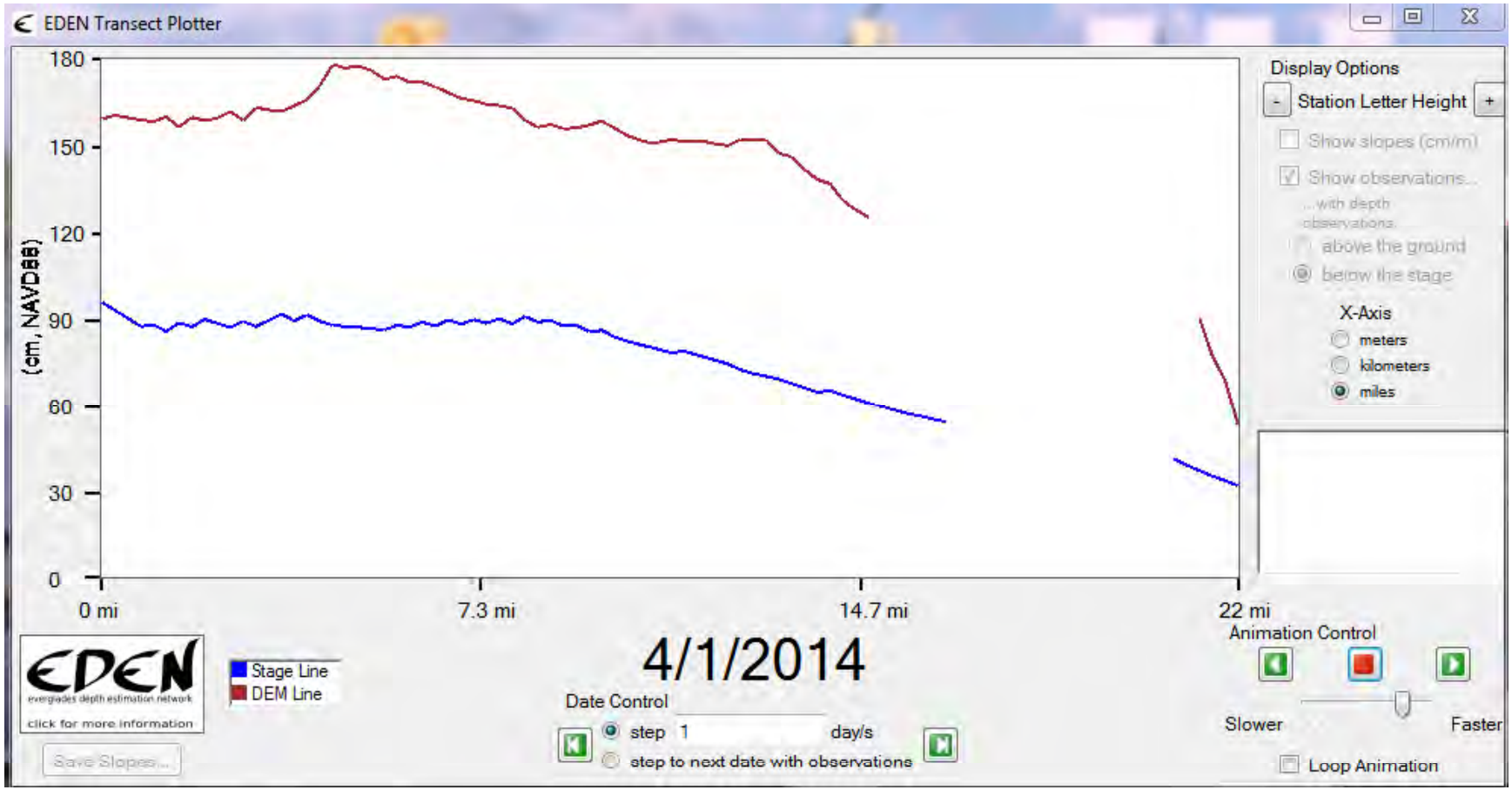


Shows a portion of the transect outside the EDEN model domain. Looks like a canal to the west separating this area from marshes in ENP.

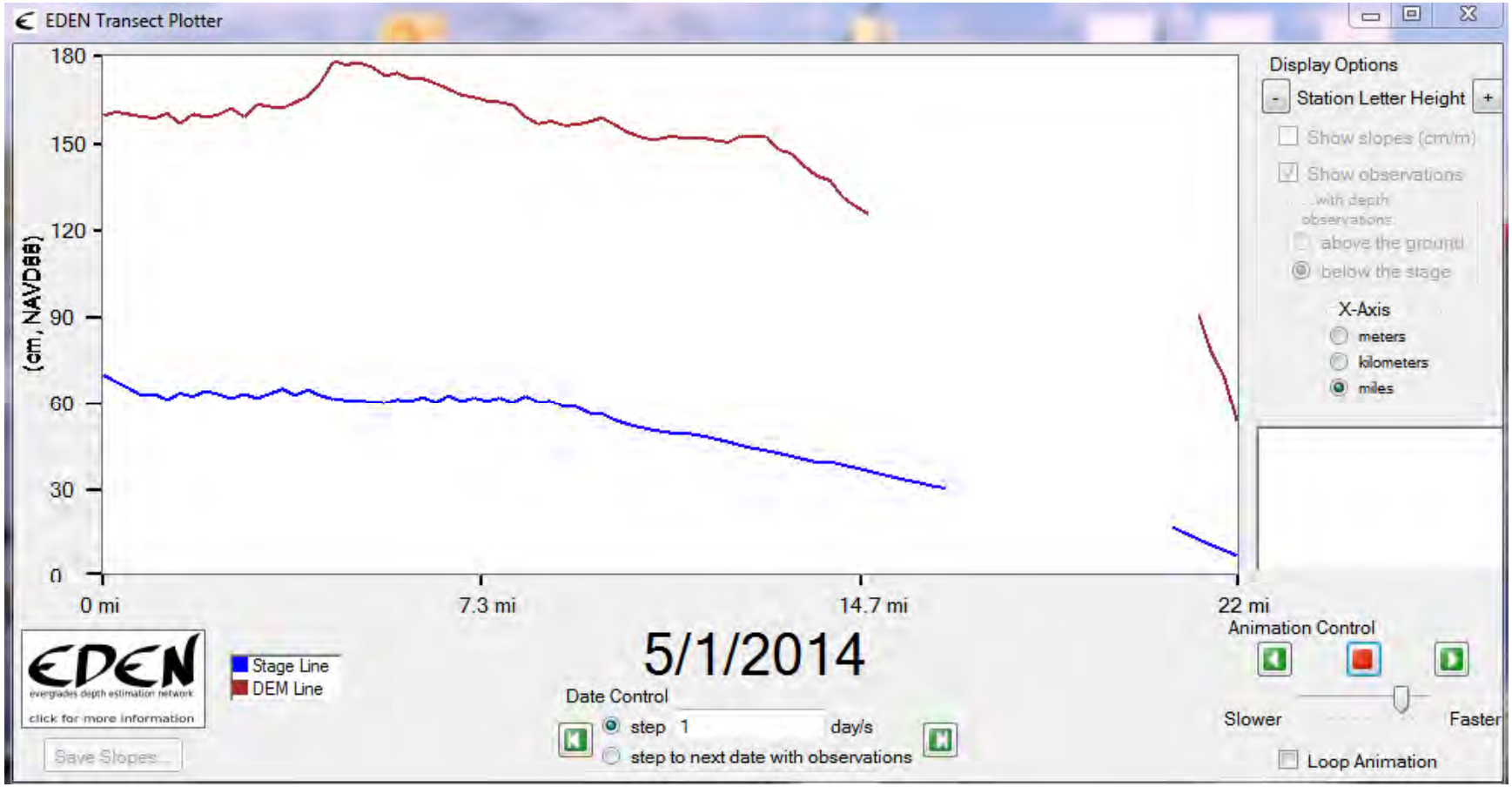
Transect A


EDEN Transect Plotter
180
150
120
90
60
30
0
(cm, NAVD88)
0 mi
7.3 mi
14.7 mi
22 mi
Display Options
Station Letter Height
Show slopes (cm/m)
Show observations...
...with depth observations:
above the ground
below the stage
X-Axis
meters
kilometers
miles
Stage Line
DEM Line
3/1/2014
Date Control
step 1 day/s
step to next date with observations
Animation Control
Slower
Faster
Loop Animation
click for more information
Save Slopes...

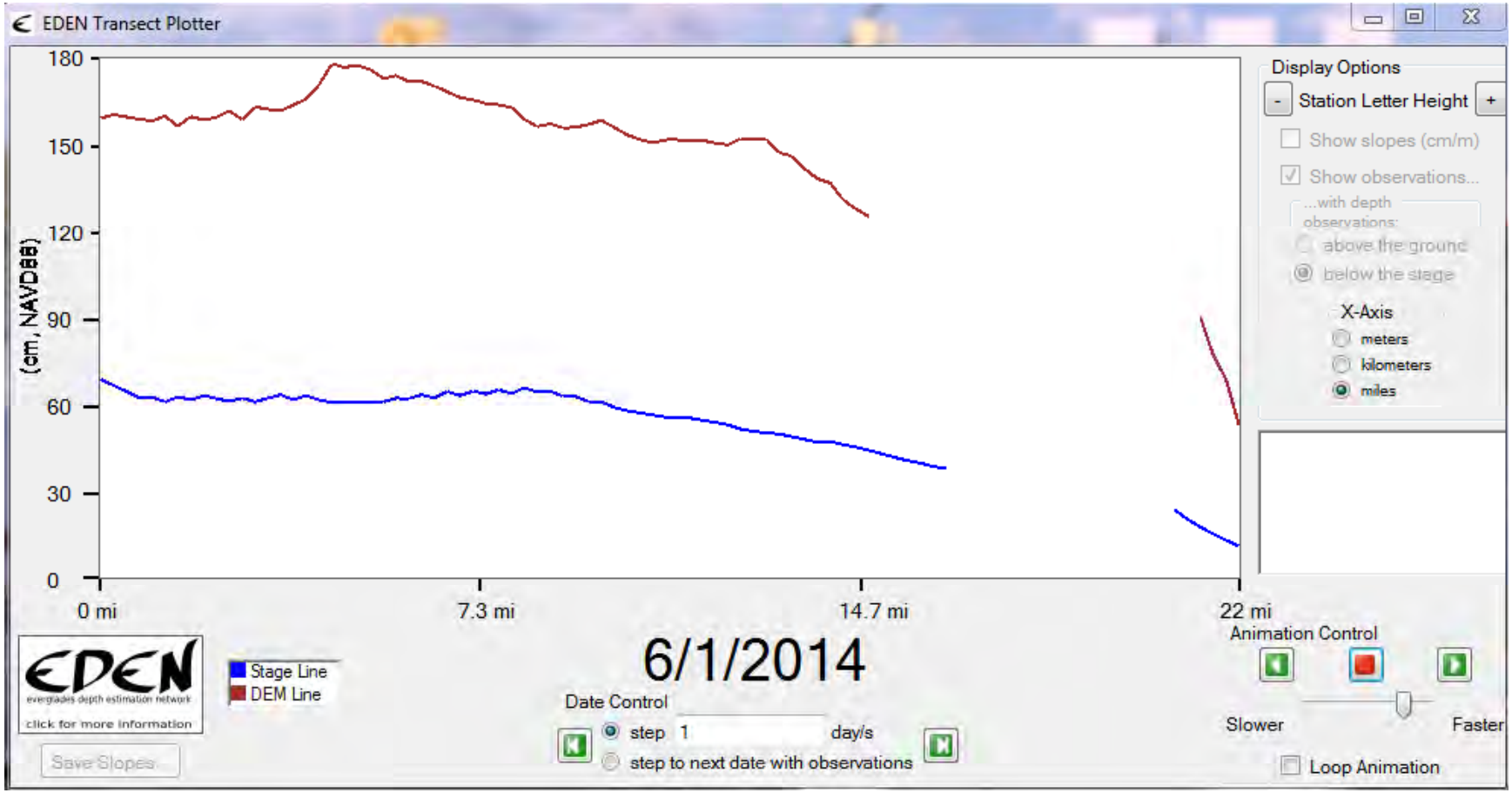
Transect A


EDEN Transect Plotter
180
150
120
90
60
30
0
(cm, NAVD88)
0 mi
7.3 mi
14.7 mi
22 mi
Display Options
Station Letter Height
Show slopes (cm/m)
Show observations...
...with depth observations
above the ground
below the stage
X-Axis
meters
kilometers
miles
EDEN
everglades depth estimation network
click for more information
Stage Line
DEM Line
4/1/2014
Date Control
step 1 day/s
step to next date with observations
Animation Control
Slower
Faster
Loop Animation
Save Slopes...

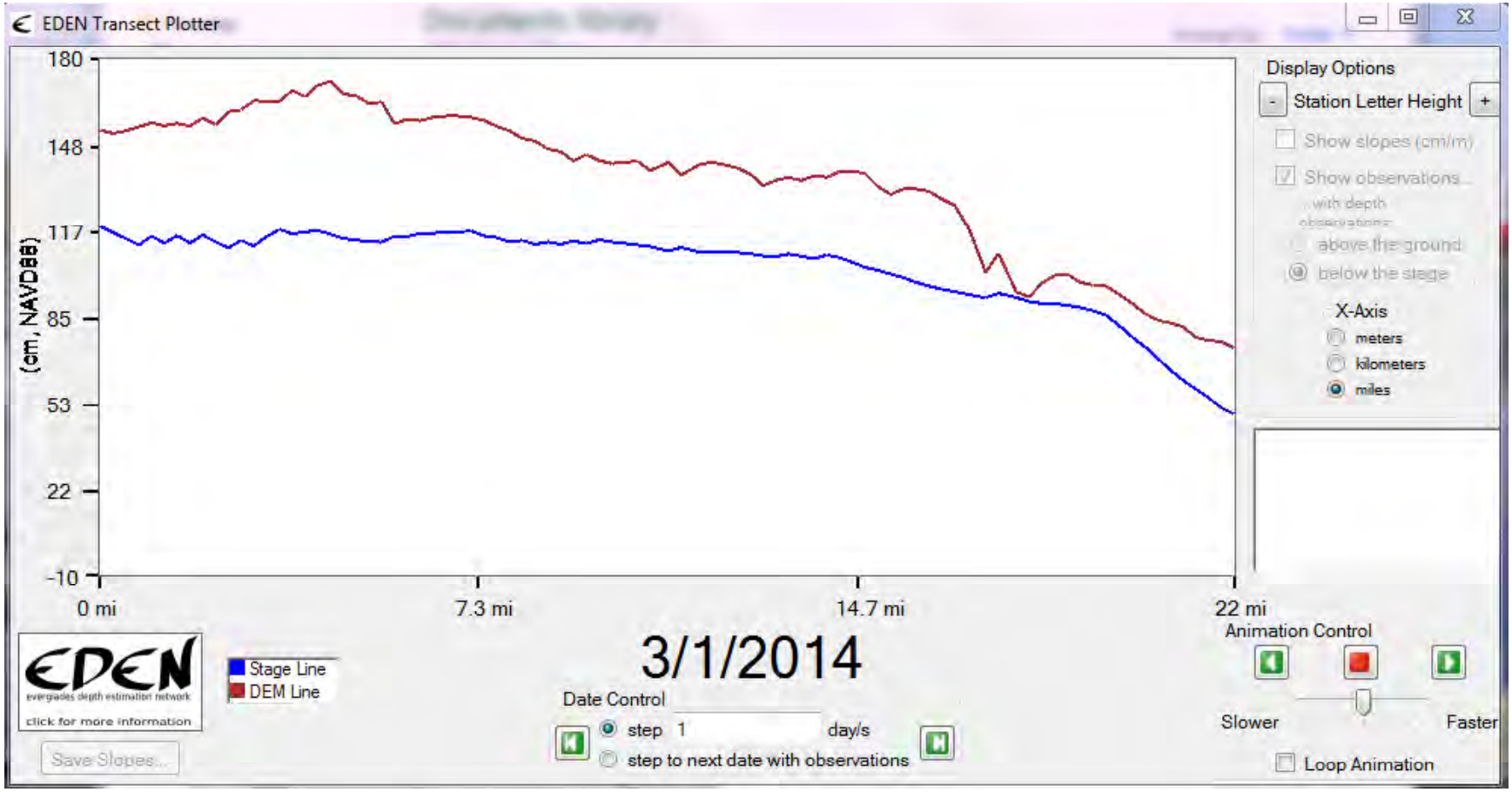
Transect A


EDEN Transect Plotter
180
150
120
90
60
30
0
(cm, NAVD88)
0 mi
7.3 mi
14.7 mi
22 mi
Display Options
Station Letter Height
Show slopes (cm/m)
Show observations
with depth observations:
above the ground
below the stage
X-Axis
meters
kilometers
miles
EDEN
everglades depth estimation network
click for more information
Stage Line
DEM Line
5/1/2014
Date Control
step 1 day/s
step to next date with observations
Animation Control
Slower
Faster
Loop Animation
Save Slopes...

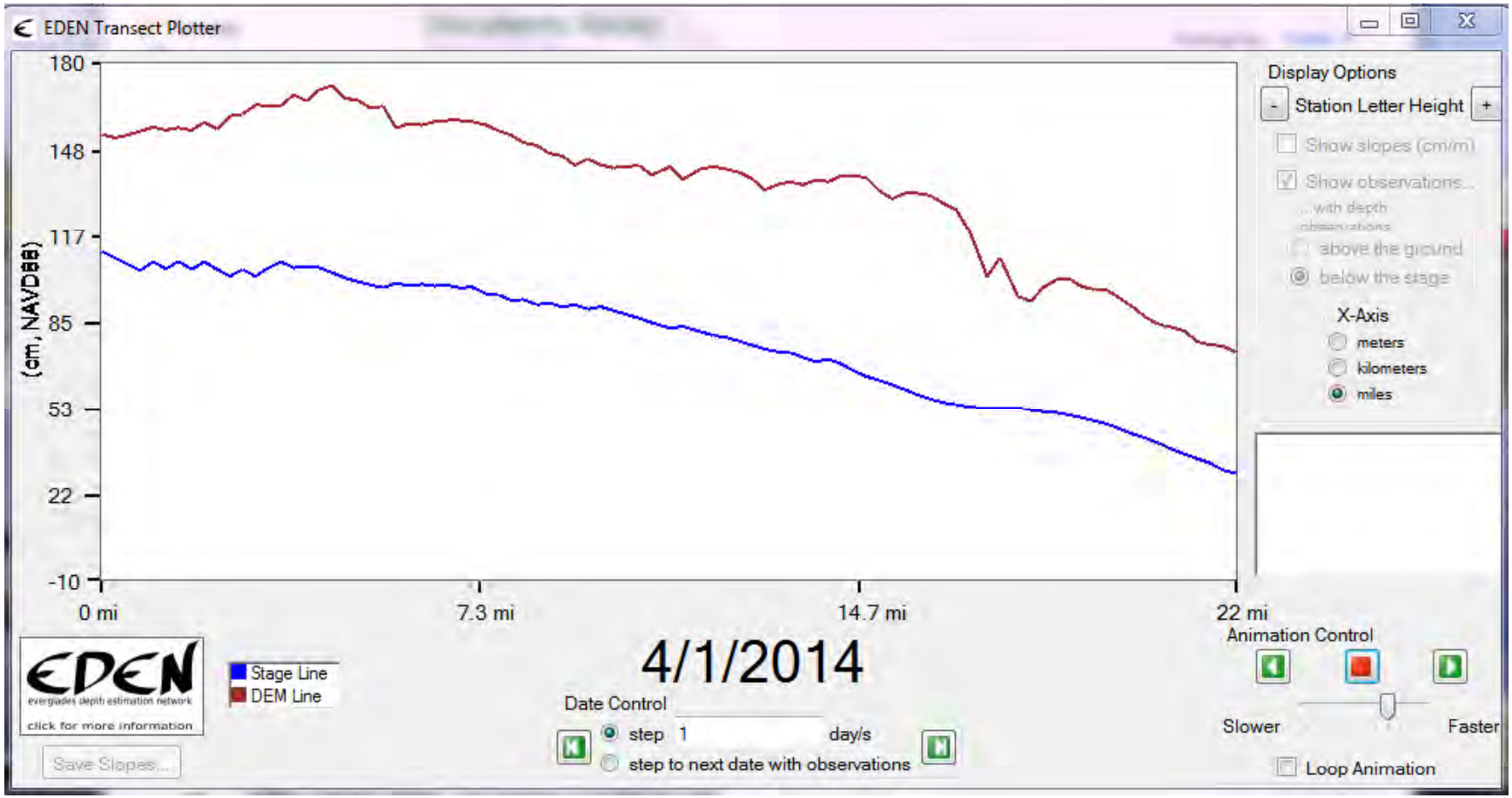
Transect A


EDEN Transect Plotter
180
150
120
90
60
30
0
(cm, NAVD88)
0 mi
7.3 mi
14.7 mi
22 mi
Display Options
Station Letter Height
Show slopes (cm/m)
Show observations...
...with depth observations:
above the ground
below the stage
X-Axis
meters
kilometers
miles
EDEN
everglades depth estimation network
click for more information
Stage Line
DEM Line
6/1/2014
Date Control
step 1 day/s
step to next date with observations
Animation Control
Slower
Faster
Loop Animation
Save Slopes

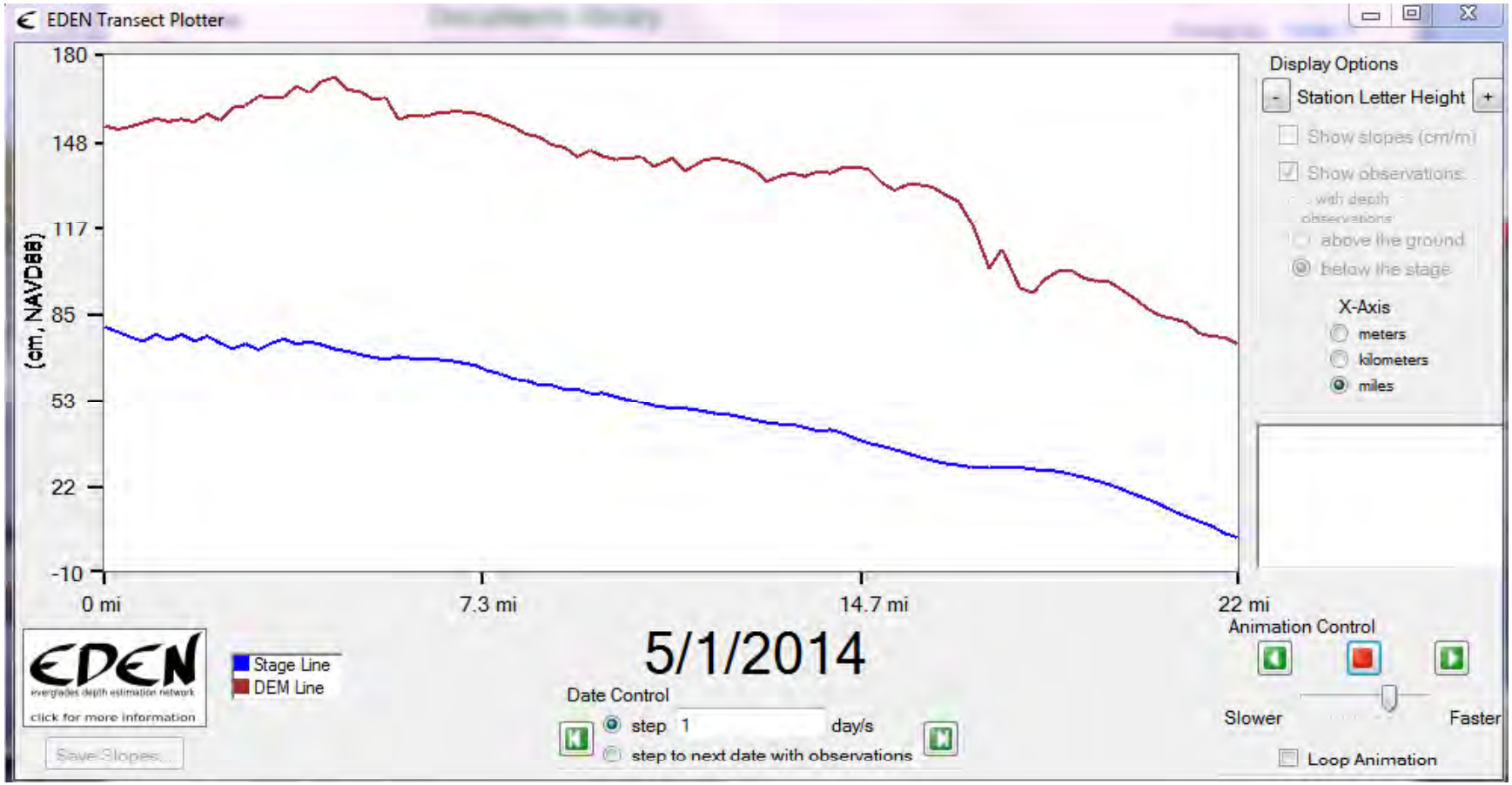
Transect B


EDEN Transect Plotter
180
148
117
85
53
22
-10
(cm, NAVD88)
0 mi
7.3 mi
14.7 mi
22 mi
Display Options
Station Letter Height
Show slopes (cm/m)
Show observations
above the ground
below the stage
X-Axis
meters
kilometers
miles
EDEN
everglades depth estimation network
click for more information
Stage Line
DEM Line
3/1/2014
Date Control
step 1 day/s
step to next date with observations
Animation Control
Slower
Faster
Loop Animation
Save Slopes...

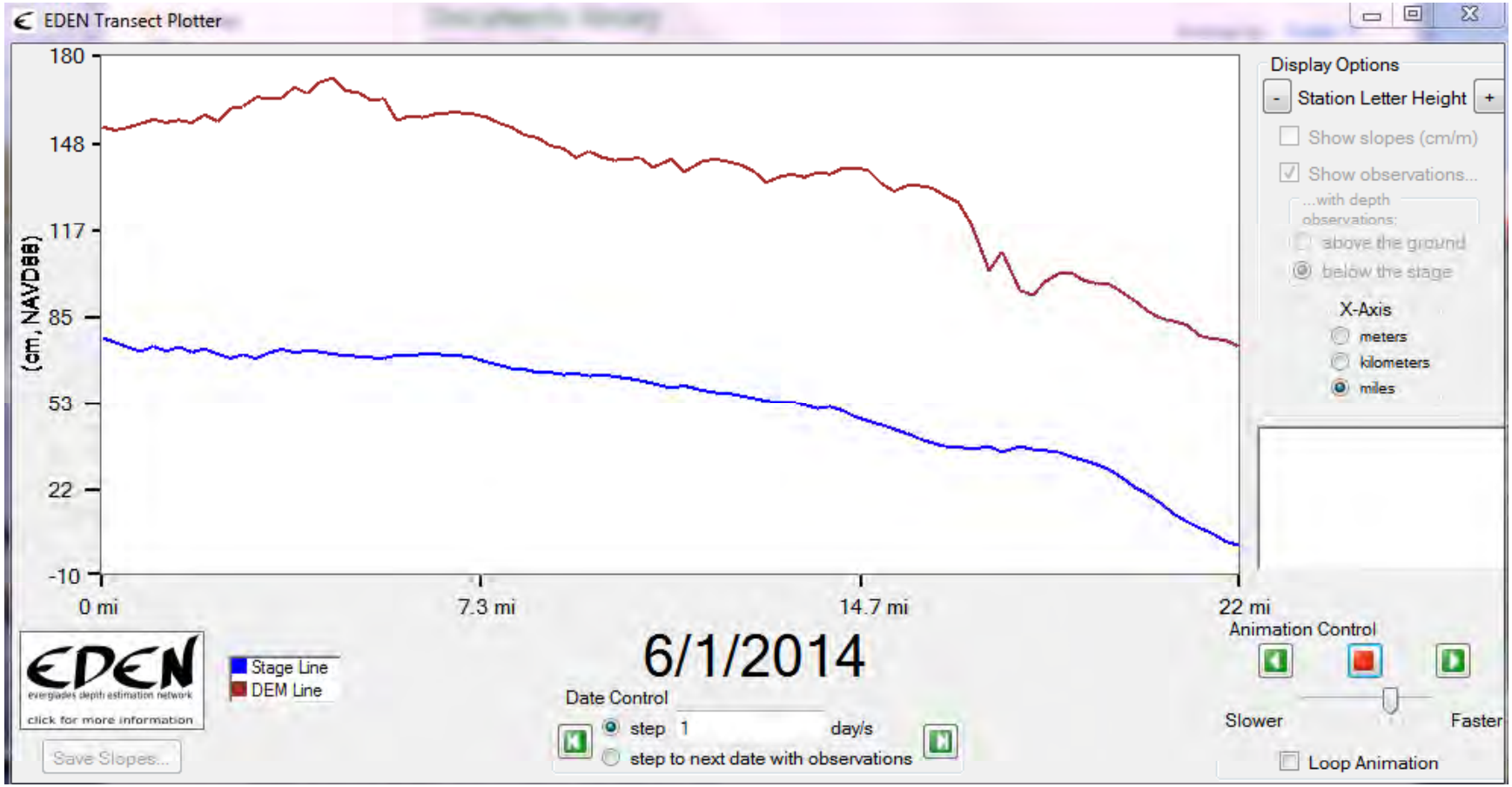
Transect B

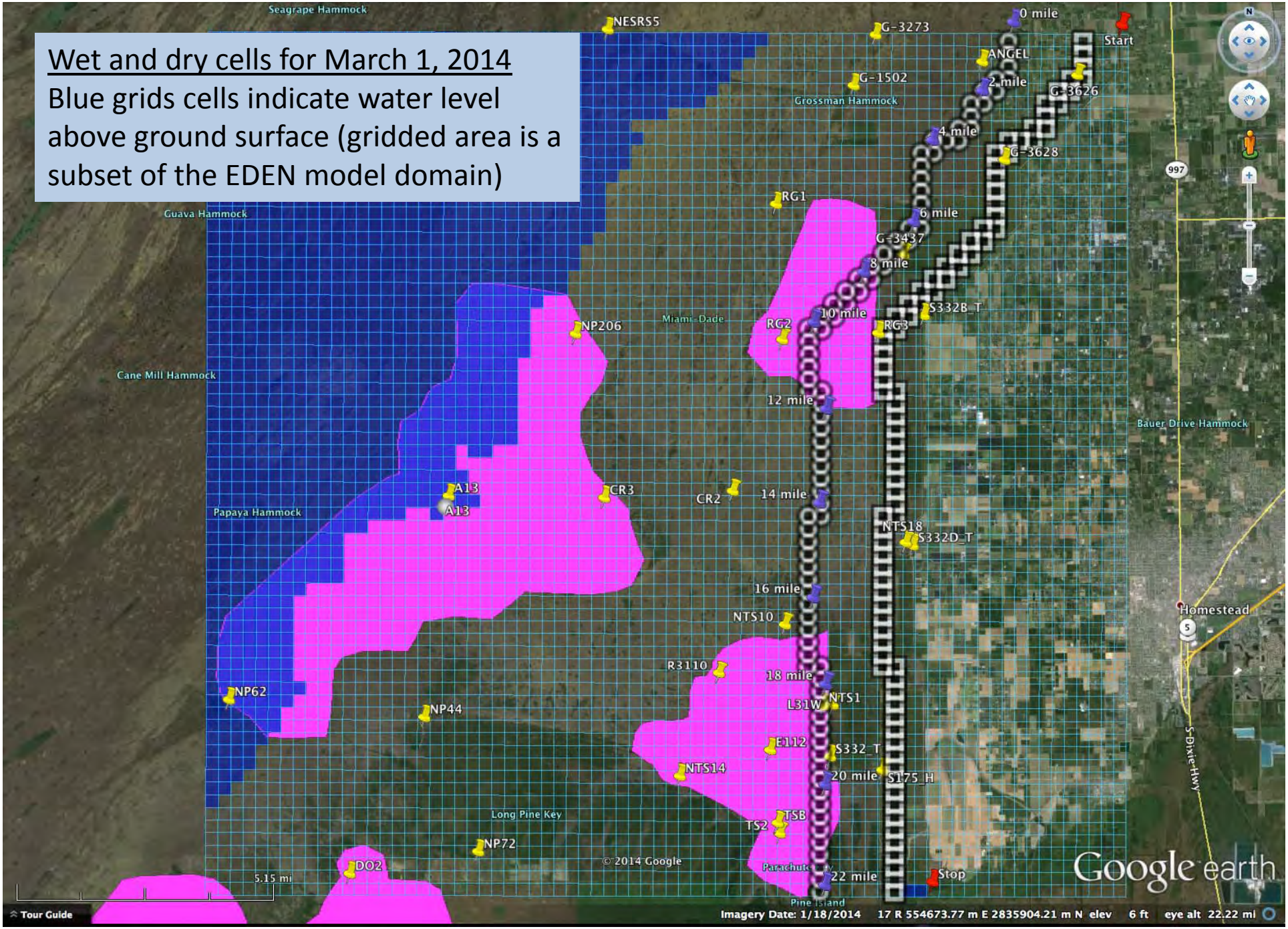

EDEN Transect Plotter
180
148
117
85
53
22
-10
(cm, NAVD88)
0 mi
7.3 mi
14.7 mi
22 mi
Display Options
Station Letter Height
Show slopes (cm/m)
Show observations...
above the ground
below the stage
X-Axis
meters
kilometers
miles
EDEN
everglades depth estimation network
click for more information
Stage Line
DEM Line
Save Slopes...
4/1/2014
Date Control
step 1 day/s
step to next date with observations
Animation Control
Slower
Faster
Loop Animation

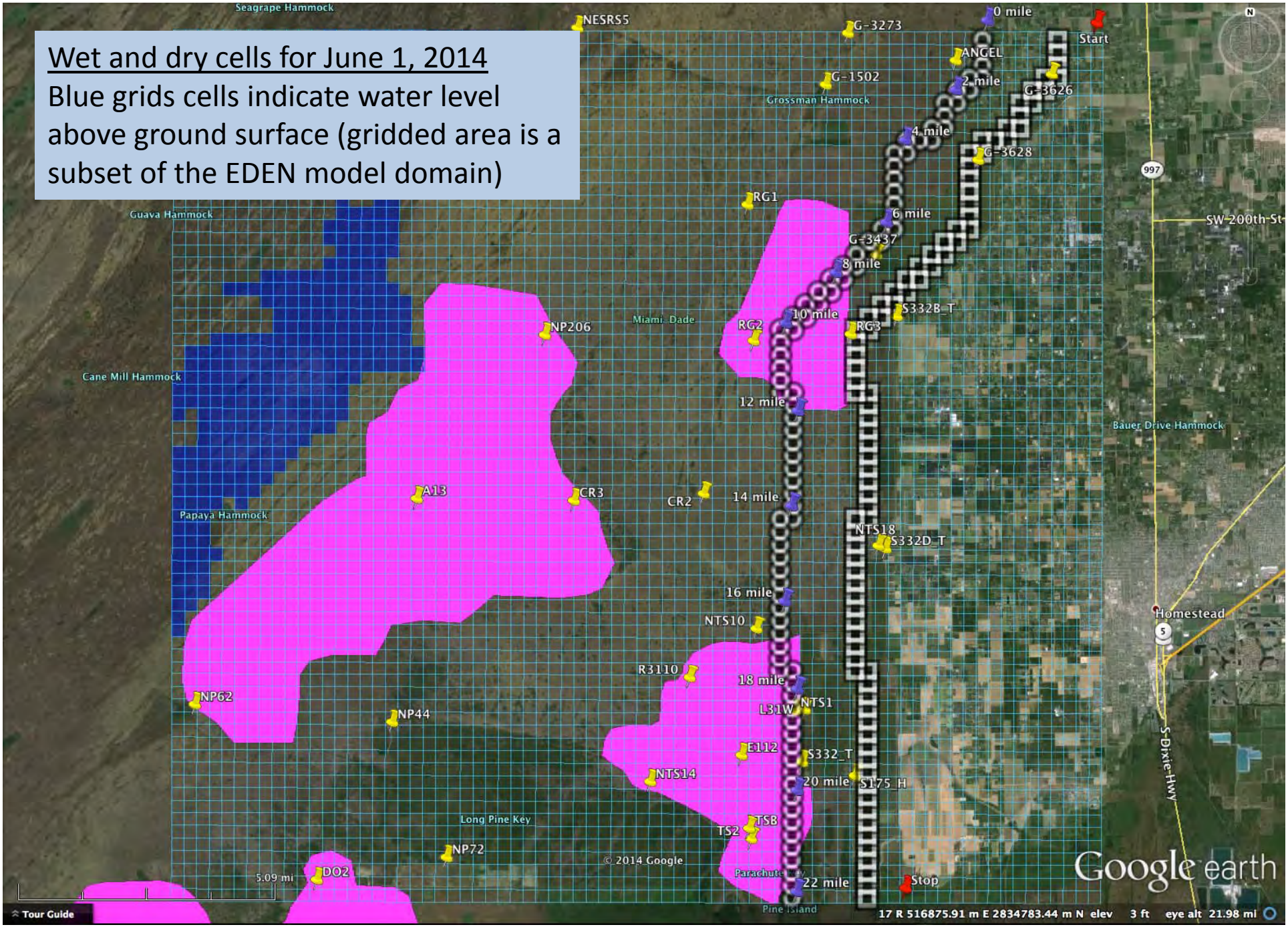
Transect B


EDEN Transect Plotter
180
148
117
85
53
22
-10
(cm, NAVD88)
0 mi
7.3 mi
14.7 mi
22 mi
Display Options
Station Letter Height
Show slopes (cm/mi)
Show observations
with depth observations
above the ground
below the stage
X-Axis
meters
kilometers
miles
Stage Line
DEM Line
5/1/2014
Date Control
step 1 day/s
step to next date with observations
Animation Control
Slower
Faster
Loop Animation
click for more information
Save Slopes...

Transect B


EDEN Transect Plotter
180
148
117
85
53
22
-10
(cm, NAVD88)
0 mi
7.3 mi
14.7 mi
22 mi
Display Options
Station Letter Height
Show slopes (cm/m)
Show observations...
...with depth observations:
above the ground
below the stage
X-Axis
meters
kilometers
miles
Stage Line
DEM Line
6/1/2014
Date Control
step 1 day/s
step to next date with observations
Animation Control
Slower
Faster
Loop Animation
Save Slopes...
click for more information


Wet and dry cells for March 1, 2014
Blue grids cells indicate water level above ground surface (gridded area is a subset of the EDEN model domain)
Seagrape Hammock
NESRS5
G-3273
0 mile
Start
ANGEL
G-1502
2 mile
G-3626
Grossman Hammock
4 mile
G-3628
997
RG1
Guava Hammock
6 mile
G-3437
8 mile
S332B_T
NP206
Miami-Dade
RG2
10 mile
RG3
Cane Mill Hammock
12 mile
Bauer Drive Hammock
A13
A13
CR3
CR2
14 mile
Papaya Hammock
NTS18
S332D_T
16 mile
NTS10
Homestead
R3110
18 mile
NP62
NP44
L31W
NTS1
E112
S332_T
NTS14
20 mile
S175_H
S Dixie Hwy
Long Pine Key
TS2
TSB
NP72
DO2
© 2014 Google
Parachute Key
22 mile
Stop
5.15 mi
Pine Island
Google earth
Tour Guide
Imagery Date: 1/18/2014 17 R 554673.77 m E 2835904.21 m N elev 6 ft eye alt 22.22 mi


Wet and dry cells for June 1, 2014
Blue grids cells indicate water level above ground surface (gridded area is a subset of the EDEN model domain)
Seagrape Hammock
NESRS5
G-3273
0 mile
Start
ANGEL
G-1502
2 mile
G-3626
Grossman Hammock
4 mile
G-3628
997
RG1
Guava Hammock
6 mile
SW 200th St
G-3437
8 mile
S332B_T
Miami-Dade
10 mile
NP206
RG2
RG3
Cane Mill Hammock
12 mile
Bauer Drive Hammock
A13
CR3
CR2
14 mile
Papaya Hammock
NTS18
S332D_T
16 mile
Homestead
NTS10
5
R3110
18 mile
NP62
NTS1
L31W
NP44
E112
S332_T
NTS14
20 mile
S175_H
S Dixie Hwy
Long Pine Key
TS8
TS2
NP72
© 2014 Google
5.09 mi
DO2
Parachute Key
22 mile
Stop
Pine Island
Google earth
Tour Guide
17 R 516875.91 m E 2834783.44 m N elev 3 ft eye alt 21.98 mi

Summary

- Based on the EDEN water-level surfaces and ground elevation model, the water level did not go above ground elevation at either Transect A or B during the period March 1 – June 1, 2014.