



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-0019

REPLY TO
ATTENTION OF

Operations Division

OCT 14 2016

Mr. Peter Antonacci
Executive Director
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406

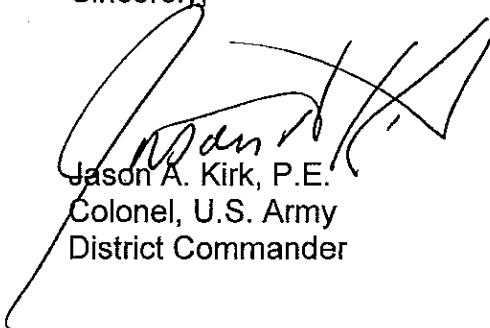
Dear Mr. Antonacci:

This letter provides official notification of the approval for the Updated Water Control Plan (WCP) for S-67, S-67X, S-68X, S-83X, S-84X, S-65C, S-65D, S-65DX1, S-65DX2, and S-65EX1 on September 20, 2016 by the U.S. Army Corps of Engineers, South Atlantic Division (SAD). An electronic version of the WCP dated September 20, 2016 has been provided to your Water Management Chief, Operations Section, Paul Linton, to be incorporated in the 1994 Master Water Control Manual for Kissimmee River – Lake Istokpoga Basin.

This WCP was prepared in accordance with current requirements of U.S. Army Corps of Engineers' regulations for WCP development. The 2016 WCP contains water management operating criteria for implementation and construction of the Kissimmee River Restoration Project.

The WCP dated September 20, 2016 is to be utilized by your agency in fulfilling responsibilities as the Kissimmee River – Istokpoga Basin Project non-Federal sponsor. My Water Management Section staff is and will continue to work closely with your staff in implementation of the updated WCP. Should you have any questions, please contact me or have your staff contact Mr. Luis A. Alejandro, Chief, Water Management Section, at (904) 232-3034.

Sincerely,


Jason A. Kirk, P.E.
Colonel, U.S. Army
District Commander



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
SOUTH ATLANTIC DIVISION
60 FORSYTH STREET SW, ROOM 10M15
ATLANTA, GA 30303-8801

CESAD-RBT

20 September 2016

MEMORANDUM FOR COMMANDER, JACKSONVILLE DISTRICT

SUBJECT: Approval of the update to the Water Control Plan (WCP) for S-67, S-67X, S-68X, S-83X, S-84X, S-65DX1, and S-65DX2, Central and Southern Florida Project with operating criteria for new Structure 65EX1 (S-65EX1)

1. Reference Memorandum, CESAJ-OD-MW, 25 July 2016, subject: Approval Request to update Water Control Plan (WCP) for S67, S67X, S-68X, S-83X, S-84X, S-65DX1, and S-65DX2, Central and Southern Florida Project with operating criteria for new Structure 65EX1 (S-65EX1).
2. The subject request for approval of the S-67, S-67X, S-68X, S-83X, S-84X, S-65DX1, S-65DX2, and S-65EX1 Water Control Plan (WCP) has been reviewed. The request is supported by NEPA documentation that demonstrates there will be no significant environmental impact resulting from the proposed operational change. This request is approved to update the Water Control Plan with operations for S-65EX1.
3. If you have any questions regarding this action, please contact Mr. Trent Ferguson, CESAD-RBT, 404-562-5128.

C.D.T.

C. DAVID TURNER
Brigadier General, USA
Commanding

CENTRAL AND SOUTHERN FLORIDA PROJECT

Updated WATER CONTROL PLAN

for

S-67, S-67X, S-68X, S-83X, S-84X, S-65C, S-65D, S-65DX1,
S-65DX2, and S-65EX1

JACKSONVILLE DISTRICT
U.S. ARMY CORPS OF ENGINEERS
20 September 2016

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APPENDIX A: Project Structure Descriptions

WATER CONTROL PLAN
for
S-67, S-67X, S-68X, S-83X, S-84X, S-65C, S-65D, S-65DX1,
S-65DX2, S-65E, and S-65EX1

7-00. Introduction.

This Water Control Plan (WCP) will be incorporated into Volume 2 - Master Water Control Manual for the Kissimmee River - Lake Istokpoga Basin (MWCM). With the exception of Pool D of the Kissimmee River, including the headwater elevations of S-65D, S-65DX1, and S-65DX2, it does not change the optimum water levels in any of the Central and Southern Florida (C&SF) Project canals or lake regulation schedules outlined in the MWCM (1994). A map of the Kissimmee River - Lake Istokpoga area is shown on Figure 7-1 on page 7-16.

This WCP contains operating criteria for the following features: Structure 67 (S-67) in Istokpoga Canal; Structure 67X (S-67X) at Istokpoga Creek; Structures 68X (S-68X), 83X (S-83X), and 84X (S-84X) in Canal 41A (C-41A); Culvert 65DX1 (S-65DX1) and Structures 65D (S-65D) and 65DX2 (S-65DX2) in Pool D of the Kissimmee River; and Structure 65EX1 (S-65EX1) in Pool E of the Kissimmee River.

S-67 is the structure that replaced Structure G-85 (G-85) in Istokpoga Canal. S-68X, S-83X, and S-84X were constructed next to S-68, S-83, and S-84, respectively. S-65DX1 replaced previously existing culvert S-65DX at the same location. S-65DX2 was constructed between S-65DX1 and the S-65D spillway. Finally, S-65EX1 was constructed approximately 400 feet west of Structure 65E (S-65E).

All elevations in this WCP are in feet, National Geodetic Vertical Datum of 1929 (ft., NGVD).

7-01. General Objectives.

In the 1992 Water Resources Development Act (WRDA), Congress jointly authorized the Kissimmee River Restoration Project (KRRP) and the Kissimmee River Headwaters Revitalization Project. However, both have since become known simply as the KRRP. This project consists of numerous features including new and replacement structures for the management of restored Kissimmee River flows and tributary flows from Lake Istokpoga. As part of the KRRP, G-85 and S-65DX were replaced by S-67 and S-65DX1, respectively. Structures S-67X and S-65DX2 were constructed to convey water at Istokpoga Creek and the Kissimmee River (C-38), respectively. Structures S-68X, S-83X, S-84X, and

S-65DX2 were constructed to be operated in conjunction with S-68, S-83, S-84, and S-65D, respectively. Newly constructed S-65EX1 was constructed to be operated in conjunction with S-65E. Structure descriptions for S-67, S-67X, S-68X, S-83X, S-84X, S-65DX1, S-65DX2, and S-65EX1 can be found in Appendix A. These additional structures were added to maintain the authorized project purpose of this portion of the Central and Southern Florida Project with the restoration of the Kissimmee River Floodplain.

Improvements made to the Istokpoga basin were the construction of S-67, its associated tieback levee, and S-67X to prevent impacts to the Lake Istokpoga Basin from the higher flood stages of the restored Kissimmee River during flood events, as well as to prevent the over-drainage of Lake Istokpoga. During Kissimmee River floods, water that would otherwise have exited Lake Istokpoga via the Istokpoga Canal can be rerouted downstream to C-41A by using S-68, S-68X, S-83, S-83X, S-84, and/or S-84X. The improvements made to the Kissimmee River Basin include increasing the discharge capacity out of Pool D (via S-65DX1 and S-65DX2) and Pool E (via S-65EX1).

7-02. Major Constraints.

a. Kissimmee River Water Level. Under most conditions, Istokpoga Canal and Istokpoga Creek discharge into the Kissimmee River. However, when the restored Kissimmee River stage is higher than the Lake Istokpoga stage and/or both S-67 and S-67X are closed to prevent backflow any required regulatory releases will be made to C-41A.

b. Maximum Allowable Gate Opening (MAGO) Limitations. The stilling basin for a spillway is designed to reduce the kinetic energy of the flow entering the downstream channel with the purpose of preventing scour downstream of the spillway from undermining or otherwise threatening the integrity of the structure. The limitation is based on trying to maintain the hydraulic jump within the stilling basin, and verifying that the velocity over the end sill and riprap are such that scour velocities are minimized. In general, MAGO curves should always be followed unless the structure is at risk of exceeding its maximum permissible head or detrimental overtopping or a combination of both. In such cases, the MAGO curves should be exceeded only as necessary to prevent exceeding the maximum permissible head or detrimental overtopping. However, other operations should be considered to prevent operating outside of the MAGO limits. For example, prior to removal of S65C during and after extreme rainfall events, Structure 65C (S-65C)

discharge may be less than the design discharge due to MAGO limitations. When this occurs, S-65D headwater elevation may need to be raised to allow a larger gate opening at S-65C to achieve the design discharge. The structure descriptions and MAGO curves for both S-65C and S-65D are in Appendix A.

c. Maximum Permissible Head Differential. The maximum permissible head differentials listed in the following table (7-1) are important to prevent the sliding or tilting of structures. However, a spillway bay should not be dewatered under the Maximum Permissible Head Differential condition described in the table below. Prior to dewatering, the maximum permissible head differential will be determined and complied with during dewatering. Also, any of these values may be replaced by a higher value if the higher value is analyzed by USACE (Jacksonville District Structures Section) and found to be safe.

Table 7-1 Maximum Permissible Head Differentials for Structures in this WCP.

<u>Structure</u>	<u>Maximum Permissible Head Differential (analyzed)</u>
S-65D	10.0
S-65DX1	10.0
S-65DX2	10.0
S-65E	10.5
S-65EX1	10.5
S-67	10.0
S-67X	8.0
S-68	9.5
S-68X	9.5
S-83	9.0
S-83X	9.0
S-84	12.7
S-84X	12.7

d. Gate Operations. As a practical consideration, a structure's spillway gate openings should not, under normal conditions, differ by more than one foot. Violation of this precaution could result in erosive action due to excessive velocities, turbulence, and return flow. However, when a gate is out of service, gate opening variation may go up to, but not exceed, three feet.

7-03. Overall Plan for Water Management - Kissimmee River Basin [C-38 (Pool D and Pool E)].

The water control operations of Pools D and E are in accordance with optimum water levels and target water levels that are specified in Tables 7-2 through 7-5. Control structures at the downstream limit of each Pool are operated to maintain the Pools within these ranges.

Ongoing construction activities within Pools C and D will affect the operations of this part of the system and are described below. Figure 7-3 shows the location of the Pools; the location and extent of Reaches 2 and 3; and the completed, ongoing and future construction projects, including expected start dates.

a. **Pool D.** This Pool represents the southern limits of backfill for the KRRP. Until an updated Kissimmee River - Lake Istokpoga Basin System Operating Manual (Volume 2) is finalized, this operational strategy will cover three distinct operational scenarios:

1. **No Construction Activities.** This scenario is prior to the beginning of backfilling C-38 within Pool D. Under this operational strategy, S-65D will be operated to maintain canal stages, as listed in Table 7-2. When S-65C is being restricted by MAGO criteria, S-65D may be used to raise the tailwater stage on S-65C up to 29.0 ft. NGVD, thereby allowing S-65C to meet desired discharges (though not more than the design discharge). Once S-65C is no longer under MAGO limitations, Pool D levels can be returned to the operational ranges in Table 7-2. The operation range used at S-65D will consider and be set based upon the existing and potential conditions as S-65C is a manually operated structure.

2. **During Backfill of C-38 in Pool D Prior to Removal of S-65C.** Once backfill operations have begun on C-38, the operator should control the stages within Pool D to maintain drainage while attempting to facilitate construction activities to the extent practicable. A dry flood plain is the ideal condition for construction as it allows unhindered maneuvering of heavy equipment and placing of backfill material. However, it is not expected to be the condition during most of the construction. When flows from S-65C are 1,500 cubic feet per second (cfs) or less with a minimum amount of local basin inflow

from Pool D, the operator should maintain the headwater at the S-65D structures at 25.8 +/- 0.2 feet NGVD. If conditions allow, S-65DX1 should be used to direct water to flow through the historic Kissimmee River (away from the C-38) up to the 1,000 cfs structure capacity. The operator should follow the S-65DX1 MAGO curve (see Appendix A) to ensure velocities do not exceed 9.9 ft./s from the structure when making releases from Pool D. If additional discharge is required to maintain headwater stages at S-65D, S-65DX2 and S-65D gate(s) should be opened accordingly. The estimated capacity of the historic river is an approximate value.

As flow increases above the 1,000 cfs capacity of S-65DX1, the S-65D and S-65DX2 gates should be opened to maintain Pool D stages, as provided in Table 7-2. As the releases from S-65C exceed bankfull discharge (~1,500 cfs), the southern limit of backfill should be inundated by raising the headwater stage at S-65D per Table 7-2. This action will help prevent excessive erosion of the downstream limit of backfill and the banks of C-38. While the 1994 MWCM contains a seasonally varying guide curve, this should not be followed during the construction period. The flow at S-65D should be based on the amount of flow in the system and construction requirements according to Table 7-2.

Table 7-2. S-65D Operational Guidelines.

Prior to S-65C Removal Condition	S-65C Discharge (cfs)	S-65D Headwater Elevation (ft. NGVD) *
Historic river within bank flow	0 to 1,500	25.8 ft. (25.6 to 26.0)
Out of bank flow to extreme event flow	1,501 to 4,300	26.0 (25.8 to 26.2) to 27.3 (27.1 to 27.5)
Extreme flow events	4,301 to 18,000	27.5 (27.3 to 27.7) to 28.8 (28.6 to 29.0)

*Adjustment of headwater elevation in response to average daily flow should follow an approximately linear relationship.

Prior to removal of S-65C and after the backfilling of sections of the C-38 downstream of S-65C, the operation of S-65D to avoid MAGO restrictions at S-65C will no longer be required due to the

stage increase upstream of the backfilled sections of C-38. S-65C and the average daily flow exceedance curves for the period of record August 9, 1969 through May 15, 2016 are provided in Figure 7-5. Also, combined (S-65D+S-65DX1+S-65DX2) average daily flow exceedance curves for the period of record from July 31, 2009 through July 18, 2016 are provided in Figure 7-6.

3. During Backfill of C-38 in Pool D After Removal of S-65C. As part of the Reach 2 backfill contract, S-65C will be removed. Flows entering Pool D will be in response to water released from Lake Kissimmee through Structure 65 (S-65) which has a firm capacity of 3,000 cfs and can discharge up to 11,000 cfs if Pool A runoff is not consuming S-65A capacity) and basin inflow from Pools A, B-C, and D (Pool B-C is the combined Pool B and C as S-65B was removed in 2000).

S-65C flow measurements will no longer be available due to the structure's removal. The PC62 gage will be used as an indicator to direct S-65D operations (see Figure 7-4). When flows are within bank (less than 1,500 cfs) as indicated by a PC62 stage of up to 40.0 ft., NGVD, S-65D headwater should be maintained so that the floodplain is not inundated at the southern limit of backfill, as directed in Table 7-3. This will keep flows within the historic river channel. If the stages at PC62 indicate large out of bank flow, greater than 40.0 ft., NGVD, then the southern limit of backfill should be inundated by raising the headwater stage at S-65D per Table 7-3. This action helps prevent excessive erosion of the downstream limit of backfill and the banks of C-38.

Table 7-3. S-65D Operational Guidelines.

After S-65C Removal			
Condition	PC62 Stage (ft., NGVD)	Approximate Flow Entering Pool D (cfs)	S-65D headwater target range (ft. NGVD) *
Historic river within bank flow	< 40.0	< 1,500	25.8 (25.6 to 26.0)
Out of bank flow To extreme event flow	40.0 to 41.5	1,500 to 4,300	26.0 (25.8 to 26.2) to 27.3 (27.1 to 27.5)
Extreme flow events	41.5 to 45.5+	4,301 to 18,000+	27.5 (27.3 to 27.7) To 28.8 (28.6 to 29.0)

*Adjustment of headwater elevation in response to average daily flow should follow an approximately linear relationship.

4. S-69 U-shaped Weir. This will be a 2,560 linear foot long, fixed crest spillway designed to start passing water at approximately a 20% (5-yr) annual chance exceedance (ACE) flood event with flows of approximately 12,000 cfs. In addition, this structure will maximize the amount of wetlands re-hydrated; maintain authorized flood control within the Kissimmee Basin; and prevent the head cutting of the restored sections of C-38. S-69 will be constructed upstream of the CSX Railroad. In addition, S-69 will also dissipate the energy of flood flows transitioning from the restored Kissimmee River floodplain to the remnant C-38 channel. Two operational periods will influence the operations of S-65D in regards to this feature.

(a) Construction Phase. Once construction of S-69 begins, the operator should continue to control the stages within Pool D to maintain drainage while trying to facilitate construction activities by limiting inundation of the flood plain to the extent practicable, given hydro-meteorological conditions in the Kissimmee Basin. S-65D will continue to maintain headwater stages based on the targets provided in Table 7-3 above. S-65DX1 will be adjusted to direct water to flow through the historic Kissimmee River (away from the C-38) to Pool E for required releases up to the structure's design capacity of 1,000 cfs.

The historic Kissimmee River will serve to convey water during construction of S-69, acting as a bypass channel. Discharges up to 1,000 cfs will be routed through S-65DX1. Discharges through S65DX1 will be limited to its design discharge of 1,000 cfs. Discharges above 1,000 cfs will be routed through available conveyance at S-65D and/or S-65DX2.

(b) After Construction. Until an updated system operating manual is completed, the general operations for S-65D structures will be operated for flood control and restoration within the defined flexibility of Table 7-3. The PC62 gage should be used as an indicator gage for the determination of the headwater stage at the S-65D structures.

(1) Less than Bankfull Discharge. When flows are less than bankfull discharges in the historic river, the S-65D structures should maintain stages at the low range to keep the flow only in the historic channel. Primary releases will be made through the S-65DX1 culvert structure, up to its design capacity of 1,000 cfs, to continue the flow down the historic river. The design capacity of S-65DX1 is near the bankfull discharge of the downstream channel. The operator should follow the S-65DX1 MAGO curve (see Appendix A) to ensure velocities do not exceed 9.9 ft./s from the structure when making releases from Pool D. If additional flow capacity is required to maintain headwater stages at S-65D, S-65D and S-65DX2, gates should be opened. Ensuring discharge velocities less than 9.9 ft. /s at S-65DX1 will limit the potential for velocities that may cause excessive erosion at the confluence of the historic river channel and the C-38..

(2) Greater than Bankfull Discharge. Before flows begin to exceed bankfull discharge, the S-65D headwater will start to bring the headwater stages above the ground surface elevation upstream of the S-65D structures. The headwater should be maintained per the guidelines in Table 7-4. The target peak headwater stage of 28.8+/-0.2 ft. NGVD may be exceeded during large flow events as dictated by flow.

Table 7-4. S-65D Operational Guidelines.

After Restoration Completion			
Condition	PC62 Stage (ft., NGVD)	Approximate Flow Entering Pool D (cfs)	S-65D headwater target range (ft. NGVD) *
Historic river within bank flow	< 40.0	< 1,500	25.8 (25.6 to 26.0)
Out of bank flow To extreme event flow	40.0 to 41.5	1,500 to 4,300	26.0 (25.8 to 26.2) to 27.3 (27.1 to 27.5)
Extreme flow events	41.5 to 45.5+	4,300 to 18,000+	27.5 (27.3 to 27.7) To 28.8 (28.6 to 29.0)

*Adjustment of headwater elevation in response to average daily flow should follow an approximately linear relationship.

b. **Pool E:** Table 7-5 lists the optimum Pool E stage. During dry periods the water level may decline below the optimum stage. Table 7-6 depicts the design discharges of each structure in C-38 Pools D and E.

Table 7-5 Optimum Stages for C-38 Pool E

C-38 Reach	Optimum Elevation (ft., NGVD 29)
Pool E (S-65D to S-65E)	21.0

Table 7-6 Kissimmee River Pool D and Pool E Structure Design Discharges

Kissimmee River Pool	Structure	Design Discharge(cfs)
Pool D	S-65D	21,300
	S-65DX1	1,000
	S-65DX2	8,600
	Total	30,900
Pool E	S-65E	24,000
	S-65EX1	13,000
	Total	37,000

c. **General.** Except where indicated in other paragraph(s) of this document, the operating agency has the flexibility to choose which structure it uses to release water from Pool D or Pool E to maintain water levels. However, all releases should stay within the discharge limits of each structure as listed in Table 7-3. Additionally, when making releases, the operator should always consider the MAGO limitations, maximum permissible head differentials, and other major constraints listed in Section 7-02.

7-04. Overall Plan for Water Management - Lake Istokpoga Basin.

This WCP does not change the Lake Istokpoga Regulation Schedule nor does it change optimum water levels in C-41A or other C&SF Project canals outlined in the MWCM. However, the "Zone - Releases" text box in Figure 7-2, Lake Istokpoga Regulation Schedule, is updated to incorporate the additional release capacity provided by S-68X, S-67, and S-67X. When Lake Istokpoga's water level is in Zone A or B of its regulation schedule, the operating agency has the flexibility to choose which structure(s) (S-68, S-68X, S-67 and/or S-67X) will be

utilized to make discharges based on the operating criteria for each structure. Table 7-7 (see p. 7-18) contains a summary of water management operating criteria for S-67, S-67X, S-68, S-68X, S-83, S-83X, S-84, and S-84X.

S-67 is located in the Istokpoga Canal, approximately three miles east of Lake Istokpoga. S-67X is a culvert located in the S-67 tieback levee on the historic Istokpoga Creek. When water is available, S-67X allows flows from Lake Istokpoga into Istokpoga Creek. When Kissimmee River floodplain water levels restrict S-67 and S-67X discharges to the Kissimmee River, S-68X, S-83X, and S-84X provide the ability to transfer Lake Istokpoga discharges from the Istokpoga Canal (via S-67) and Istokpoga Creek (via S-67X) to C-41A. The normal or forward direction of flow through S-67 and S-67X is considered to be from the Lake Istokpoga side of these structures to the Kissimmee River side. Reverse flow is considered to be flow from the Kissimmee River side of these structures to the Lake Istokpoga side and should be avoided.

S-68X is located approximately 230 feet northeast of S-68. S-83X is located approximately 240 feet south of S-83. S-84X is located approximately 70 feet north of S-84. When operated in conjunction with S-68, S-83, and S-84, respectively, S-68X, S-83X, and S-84X allow the ability for higher discharges from Lake Istokpoga when it is in Zone A of its regulation schedule. This is provided by additional discharge capability at Lake Istokpoga (S-68X) and C-41A (S-83X and S-84X). In addition, S-83X and S-84X provide additional discharge capability of local runoff accumulating in C-41A.

a. Lake Istokpoga Regulation Schedule - Zone A. When Lake Istokpoga's water level is in Zone A, S-68, S-68X, S-67, and S-67X may be utilized to make discharges from Lake Istokpoga. Up to 400 cfs may be discharged through S-67, and up to 200 cfs may be discharged through S-67X. The Lake Istokpoga Regulation Schedule, this WCP, and the WCM will be utilized to determine S-68 and S-68X discharges from Lake Istokpoga.

b. Lake Istokpoga Regulation Schedule - Zone B. When Lake Istokpoga's water level is in Zone B, S-68, S-68X, S-67, and S-67X may be utilized to make discharges from Lake Istokpoga. Up to 400 cfs may be discharged through S-67, and up to 200 cfs may be discharged through S-67X to maintain downstream flows for

agricultural water supply, navigation, and/or environmental purposes.

When the Lake Istokpoga water level is in Zone B, water managers should attempt to avoid or minimize releases toward the Kissimmee River through S-67 and S-67X when it appears that water is needed southeast of Lake Istokpoga in C&SF Project canals in the Lake Istokpoga Basin.

The Lake Istokpoga Regulation Schedule, this WCP, and the WCM will be utilized to determine S-68 and S-68X discharges from Lake Istokpoga.

c. Lake Istokpoga Regulation Schedule - Zone C. When the Lake Istokpoga water level is in Zone C, no releases may be made through S-68, S-68X, S-67 or S-67X.

7-05. Standing Instructions to Structure Operator.

Please refer to Appendix E of the MWCM for the Standing Instructions to Structure Operator.

The spillway and culvert structure discharge rating curves that are being used must be applicable to the particular flow regime encountered. Discharge rating curves as well as structure descriptions and hydraulic data for the structures are found in Appendix A. The gates should be opened and closed gradually to provide an even transition to the new flow regime and to minimize hydraulic effects downstream. The tailwater stage should be allowed to build up before the next gate opening operation takes place. Spillway and culvert structure gate openings should be checked against the MAGO curve to ensure that the gate openings do not exceed the allowable gate opening for non-damaging operations. The MAGO curves for the structures are also found in Appendix A. The spillway gates should be operated at approximately the same gate opening.

7-06. Flood Control.

The regulation schedules of the Kissimmee Chain of Lakes and Lake Istokpoga vary on a seasonal basis. These regulation schedules are designed to achieve increased flood control capacity prior to the wet season.

a. Lake Istokpoga. S-68, S-68X, S-67, and S-67X are operated for flood control consistent with the Lake Istokpoga Regulation Schedule. When Lake Istokpoga's water level is in Zone A of the regulation schedule, releases shall be made at

S-68 and/or S-68X. S-68 has a firm capacity of 3,000 cfs while S-68X has a firm capacity of 1,000 cfs. S-68 has an additional or secondary capacity of up to 2,900 cfs (total capacity of 5,900 cfs) when there is no local runoff into C-41A. A total of up to 6,900 cfs can be discharged to C-41A from Lake Istokpoga when both S-68 and S-68X are utilized. Up to 400 cfs may be discharged through S-67, and up to 200 cfs may be discharged through S-67X.

If Lake Istokpoga is in Zone A of its regulation schedule, and if it appears likely that, without gate closure, the S-67 tailwater will soon exceed the S-67 headwater, the gates of S-67 and S-67X should be closed as needed to prevent reverse flow. Reverse flow through S-67 and S-67X should be avoided. This criteria is intended to avoid exacerbating high water conditions in the Lake Istokpoga Basin and/or to avoid potential damage to these structures.

b. C-41A Regulation. S-83, S-83X, S-84, and S-84X are operated for flood control in C-41A by maintaining canal water levels in accordance with operating criteria in Table 7-7. When local inflow conditions permit, S-68 and S-68X combined may discharge up to 6,900 cfs into C-41A from Lake Istokpoga. Of this 6,900 cfs, 4,830 cfs would be conveyed downstream to S-84 and S-84X when both S-83 and S-83X are utilized. The remainder (2,100 cfs) would be passed through Structure 82 (S-82) to Canal 39A (C-39A), Canal 40 (C-40), and/or Canal 41 (C-41). S-84 and S-84X would be utilized to convey S-83 and S-83X discharges as well as local basin runoff to C-38.

c. S-65D, S-65DX1 and S-65DX2. S-65DX1 is operated for flood control by conveying water down the historic Kissimmee River during high water conditions and as discussed in Section 7-03. As discussed in Section 7-03, S-65DX2 is operated for flood control in conjunction with S-65D; the operating agency has the flexibility to choose either one structure (S-65DX2 or S-65D) or both structures (S-65DX2 and S-65D) to make discharges. During extreme high water conditions upstream of S-65DX1, S-65DX2, and S-65D, all of these structures will function together to convey water downstream.

d. S-65E and S-65EX1. S-65E and S-65EX1 are operated for flood control by conveying water downstream to Lake Okeechobee during high water conditions. S-65EX1 is operated for flood control in conjunction with S-65E to regulate Pool E water

levels, insofar as possible, in accordance with the optimum water level indicated in Section 7-03 and Table 7-5. The operating agency has the flexibility to choose either one structure (S-65EX1 or S-65E) or both structures (S-65EX1 and S-65E) to make discharges.

e. Tropical Storm (including Hurricane) Regulations. These regulations are supplemented by emergency action plans contained in CESAJ SOP 500-1-1 Standard Operating Procedure. CESAJ SOP 500-1-1 should be consulted for related emergency preparation and actions. The South Florida Water Management District (SFWMD) document, "Major Storms Procedures, Structure Status Summary", indicates the status of structures during a storm and is updated periodically.

7-07. Recreation.

Navigation usage in Lake Istokpoga is primarily recreational craft, mostly small fishing boats. Although there are no water management operations in this WCP specifically for recreation, a boat ramp has been constructed in the Istokpoga Canal east of S-67 and U.S. Highway 98. The canal in the vicinity of the boat ramp has been widened and deepened.

7-08. Water Quality.

Regulations for water quality are a function of the State of Florida. The SFWMD, acting on behalf of the state, petitions the United States Army Corps of Engineers (USACE) for changes in flood control and navigation regulations where it sees that water quality benefits may be achieved in the project area without loss of significant project benefits for the project's authorized purposes. Generally, no water management operations are made specifically for water quality in the Kissimmee River and Lake Istokpoga Basins.

7-09. Fish and Wildlife.

When the Lake Istokpoga water level is in Zone B, S-68, S-68X, S-67, and S-67X may be utilized for the benefit of fish and wildlife. Releases from Lake Istokpoga may be made to maintain downstream flows for environmental purposes.

S-65DX1 is operated for fish and wildlife enhancement by conveying flow to the historic Kissimmee River as discussed in Section 7-03.

7-10. Water Supply.

When Lake Istokpoga's water level is in Zone B, S-68, S-68X, S-67, and S-67X may be utilized to provide downstream flows for agricultural water supply, navigation and environmental purposes.

7-11. Navigation.

Navigation usage in Lake Istokpoga is primarily recreational craft, mostly small fishing boats. The Federal navigation project for the Istokpoga Creek is a three-foot depth project. Water levels downstream of S-67 and S-67X fluctuate with water levels in the restored Kissimmee River and local inflow.

7-12. Deviation From Normal Regulation.

The U.S. Army Corps of Engineers (USACE) Jacksonville District (SAJ) Engineer is occasionally requested to approve deviations from the normal regulation of the lakes. Prior approval for a deviation is to be obtained from the USACE, South Atlantic Division (SAD) except as noted below. Deviation requests usually fall into the following categories:

a. Emergencies. Some emergencies that can be expected are: drowning and other accidents, failure of operation facilities, and flushing of unexpected pollutants when necessary. Necessary action under emergency conditions is taken immediately unless such action would create equal or worse conditions. SAJ shall be informed as soon as practicable. A written confirmation showing the deviation and conditions will be furnished to SAD after the incident.

b. Unplanned Minor Deviations. There are unplanned instances that create a temporary need for minor deviation from normal regulation of the lakes, although they are not considered emergencies. Construction accounts for the major portion of these incidents. Changes in releases are sometimes necessary for maintenance and inspection. Requests for changes of release rates are generally for a few hours or a few days. Each request is analyzed on its own merits. Consideration is given to upstream watershed conditions, potential flood threat, conditions of lakes, and possible alternative measures. In the interest of maintaining good public relations, the requests for minor deviations are generally granted, providing that these deviations will not have adverse effects on the ability of the project to achieve the authorized purposes. Approval for these minor deviations will normally be obtained from SAD by telephone. A written confirmation showing the deviation will be furnished to SAD after the deviation is complete.

c. Planned Deviations. Each deviation will be planned on its own merits. Sufficient data on flood potential, watershed conditions, water management area stages, possible alternative measures, benefits to be expected, and probable effects on other authorized and useful purposes will be presented by letter, telephone, or telefacsimile to SAD along with recommendations for review and approval letter.

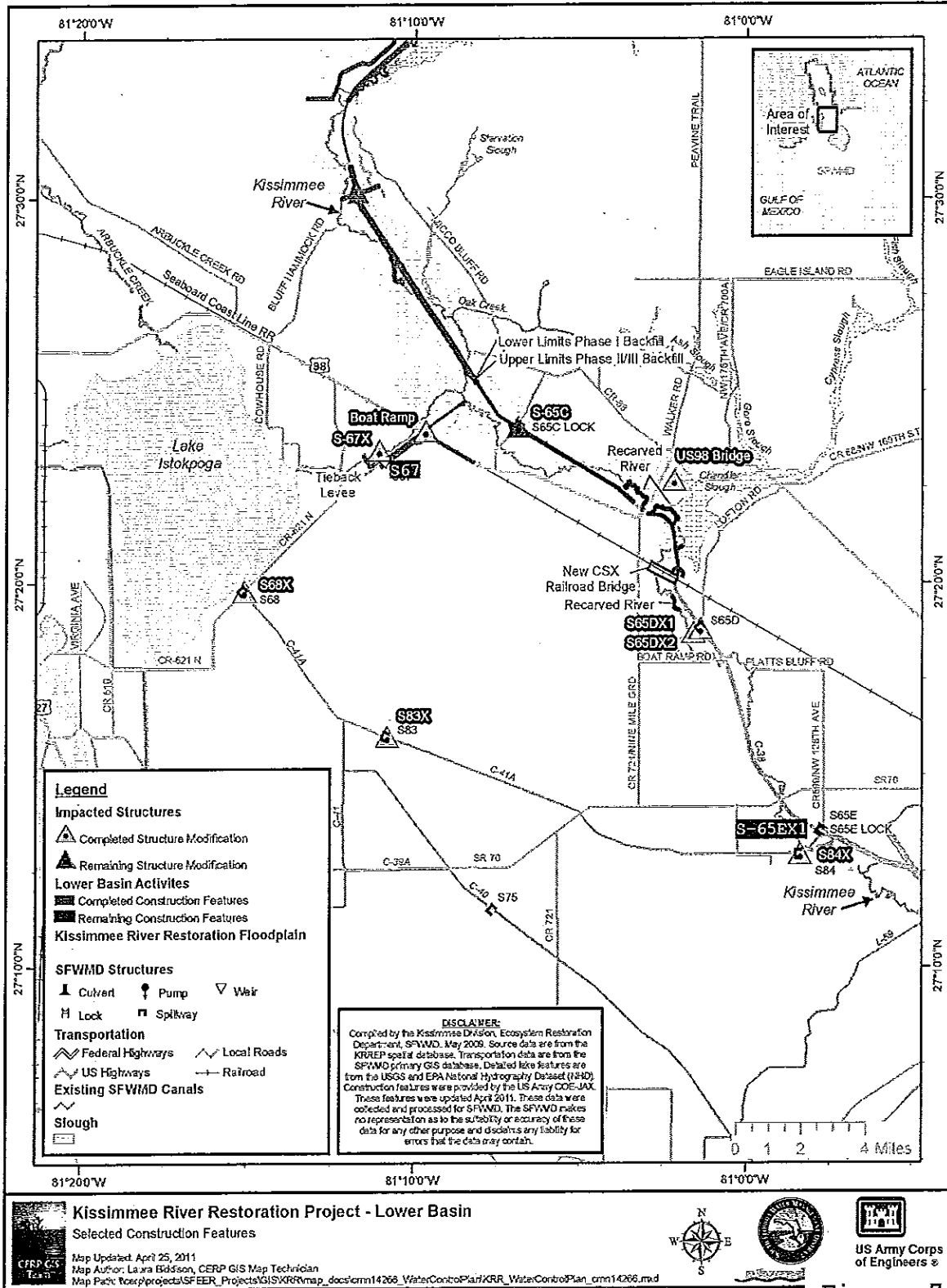
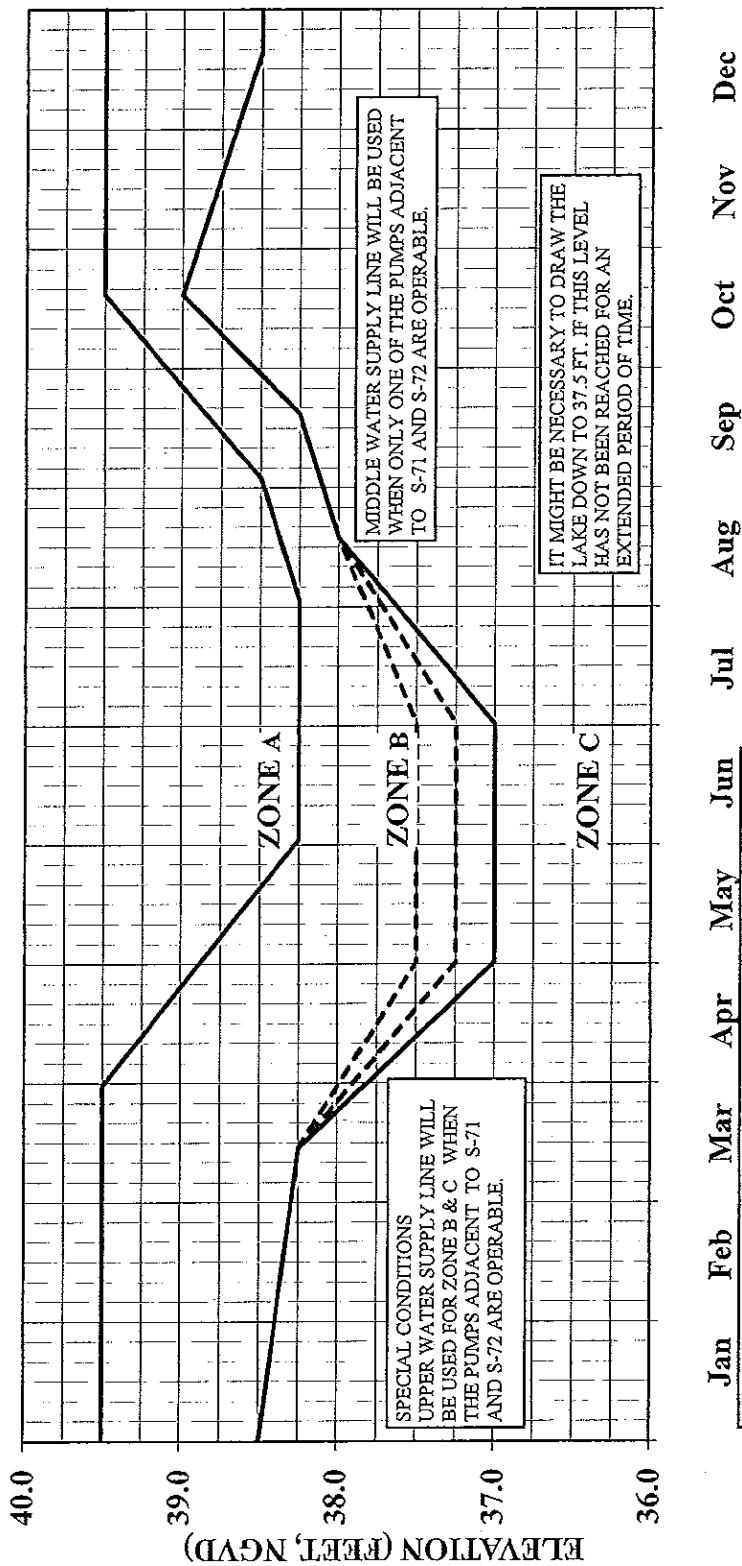


Figure 7-1



CENTRAL AND SOUTHERN FLORIDA
KISSIMMEE RIVER BASIN

REGULATION SCHEDULE
LAKE ISTOKPOGA

US ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS, JACKSONVILLE,
FL

DATED: MARCH 2012

ZONE RELEASES

Zone A Regulatory releases made through all outlets:
S-68 and S-68X firm capacity 3,000 cfs
S-68 and S-68X secondary capacity up to 6,900 cfs

Zone B S-67 and S-67X capacity up to 600 cfs
Water supply release made if needed

Figure 7-2

Table 7-7

Summary of Water Management Operating Criteria for the Lake Istokpoga Regulation Schedule

Structure	Zone A	Zone B	Zone C
S-67	May discharge up to 400 cfs, but should avoid reverse flow	No releases	No releases
S-67X	May discharge up to 200 cfs, but should avoid reverse flow	No releases	No releases
S-68X	May discharge up to 1,000 cfs, FIRM Capacity	May discharge to maintain downstream flows for agriculture water supply navigation, and environmental purposes.	No releases
S-68	May discharge up to 3,000 cfs, FIRM Capacity.	May discharge to maintain downstream flows for agriculture water supply navigation, and environmental purposes.	
	May discharge an additional 2,900 cfs, if downstream capacity is available.		
S83	May discharge up to 3,830 cfs, to maintain upstream water levels between 31.8 and 32.2 ft., NGVD. (During extreme emergency conditions may discharge up to 5,500 cfs per 1994 MWCM).		
S-83X	May discharge up to 1,000 cfs, to maintain upstream water levels between 31.8 and 32.2 ft., NGVD		
S-84	May discharge up to 5,670 cfs, to maintain upstream water levels between 31.8 and 32.2 ft., NGVD		
S-84X	May discharge up to 1,000 cfs, to maintain upstream water levels between 24.3 and 25.2 ft., NGVD		



Location of Reference Gages PC62 and PC33 for S-65D Operations

0 1 2 4 6 8 Miles

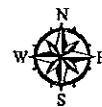


Figure 7-4. Location of PC62 gage to be used as indicator for S-65D operations.

S-65C Average Daily Flow Exceedance Curves (August 9, 1969 through May 15, 2016)

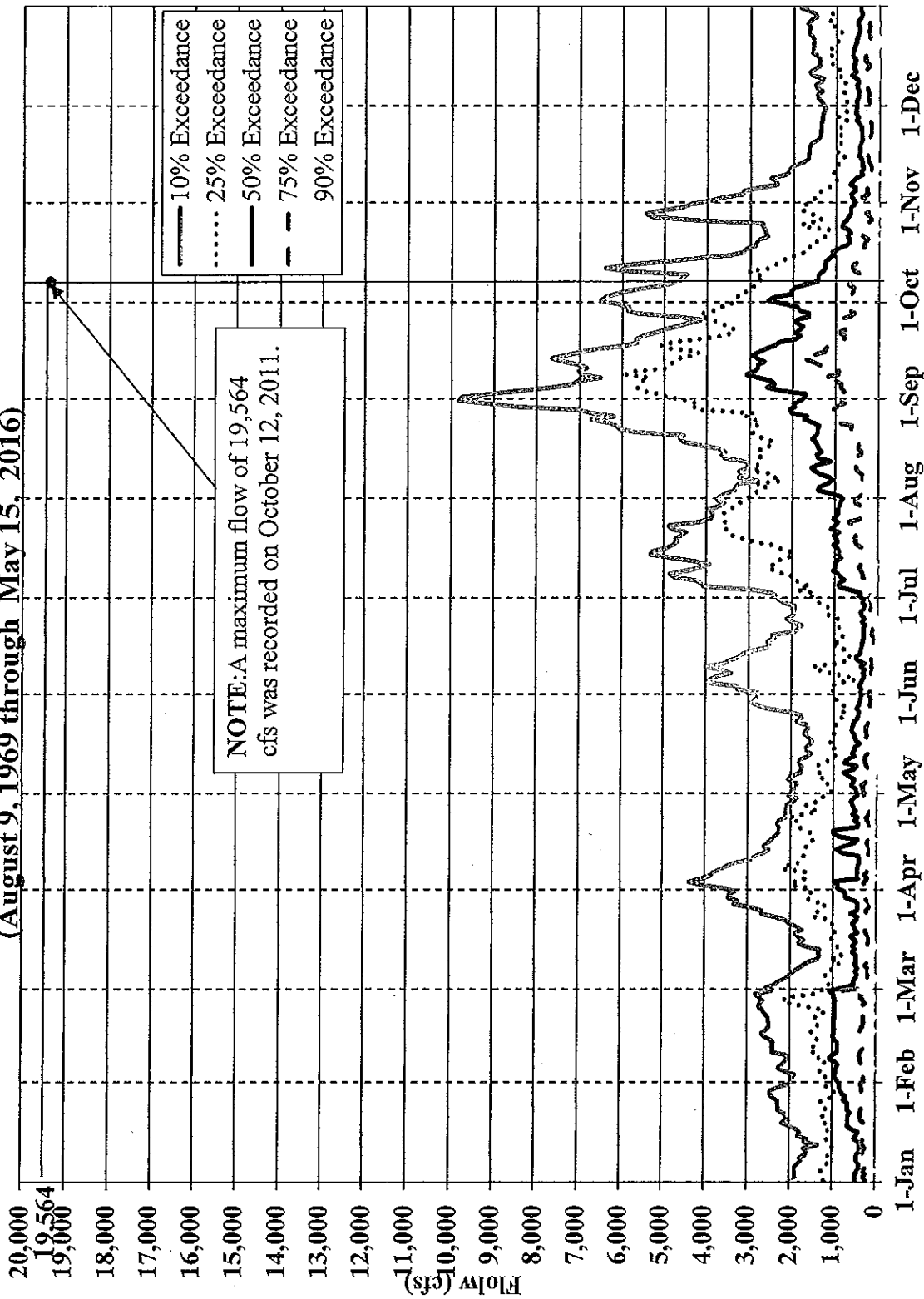


Figure 7-5

Combined (S-65D+S-65DX1+S-65DX2) Average Daily Flow Exceedance Curves (July 31, 2009 - July 18, 2016)

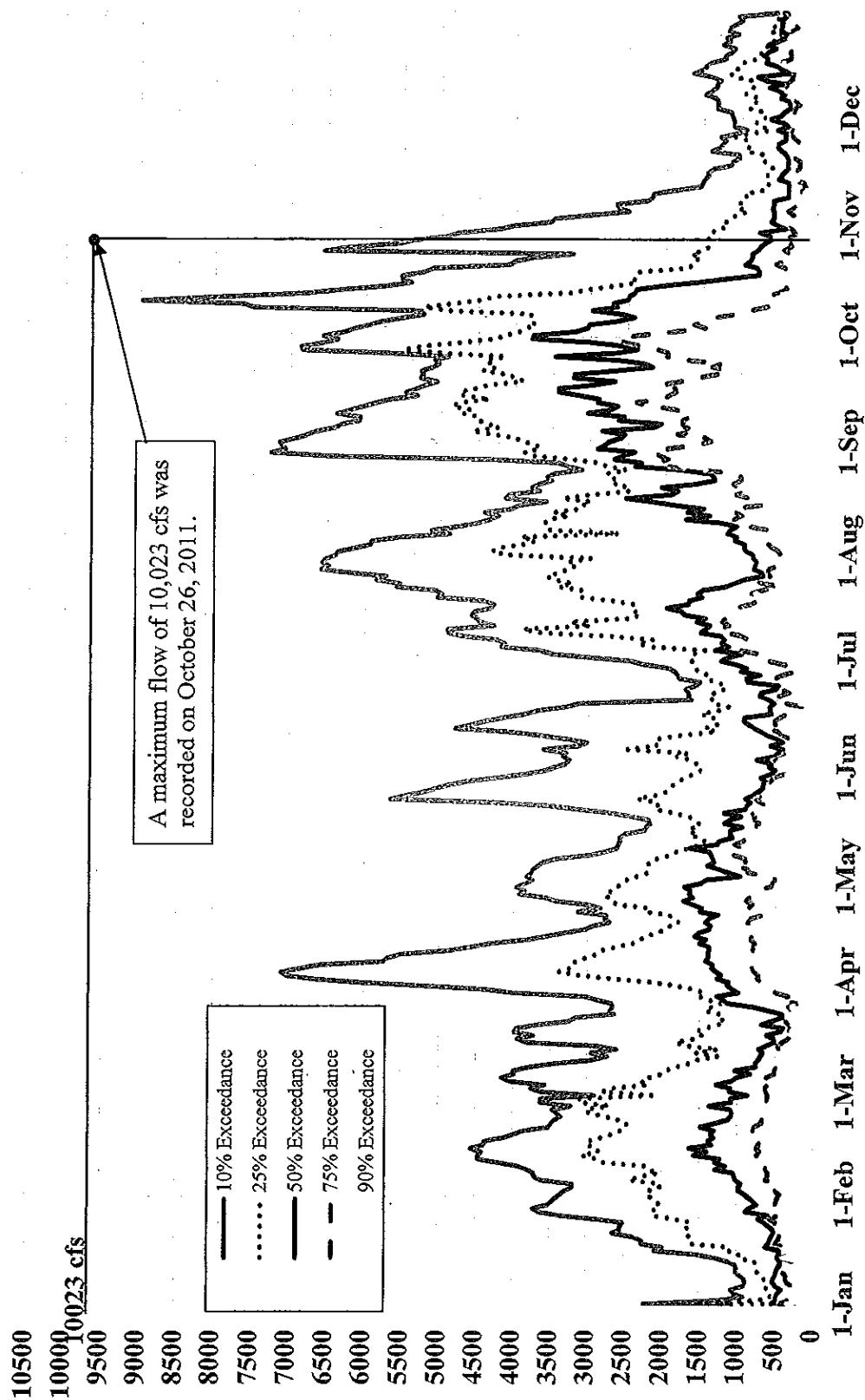


Figure 7-6